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Drug and Cosmetic Industry

August 1957

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Drug and Cosmetic Industry

Contents August 1957 Vol. 81 No. 2

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Feature Articles

163 **Foaming Agents in Cosmetics** *by Karl Bergwein*

166 **Tablet Disintegration with Cellulose** *by Robert J. Bequette and C. Lee Huyck*

168 **Glycerine and Cosmetics** *by Joseph Kalish, Ph.D.*

170 **World-Wide Medicine**

172 **Accidental Returns from Research** *by W. Furness Thompson*

174 **Wonder Drugs Tomorrow** *by Thomas J. Winn*

176 **Deodorants and Antiperspirants** *by Emil G. Klarmann, Sc.D.*

Packaging and Selling Section

183 **Women as Cosmetic Customers** *by Florence Goldin*

187 **Packaging and Selling** *by Frazer V. Sinclair*

195 **News in Packaging**

Departments

155 **Keeping Posted** *by Thomas R. Farrell*

197 **Patent Thoughts and Trends** *by Thomas Cifelli, Jr.*

201 **News**

213 **Management Forum** *by Francis Chilson*

223 **Advancing Therapy** *by Joseph Kalish, Ph.D.*

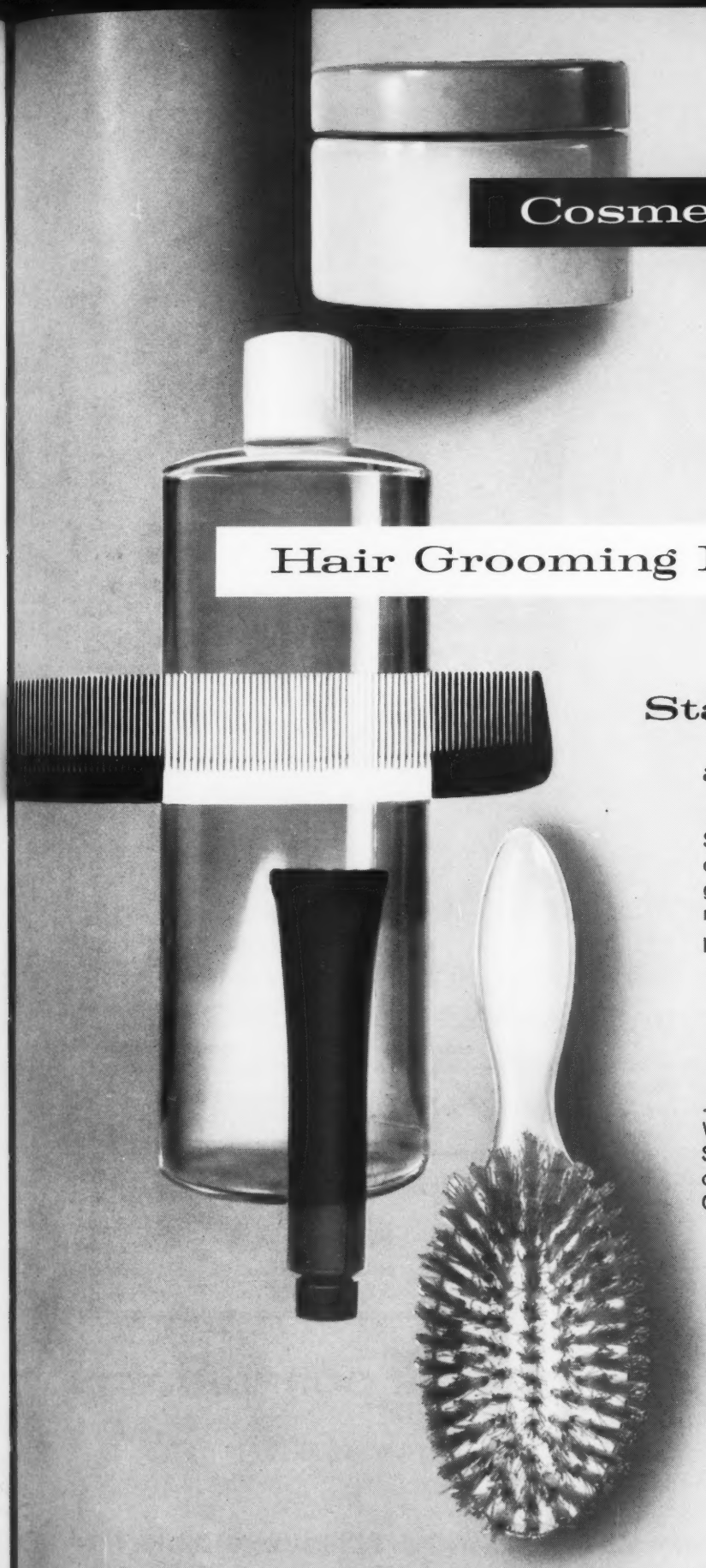
227 **Compounder's Corner** *by Joseph Kalish, Ph.D.*

230 **Perfumer's Shelf** *by Joseph Kalish, Ph.D.*

233 **Skin Research** *by Joseph Kalish, Ph.D.*

236 **Industry's Books** *by Harry G. Kelbly*

240 **Trade Literature**



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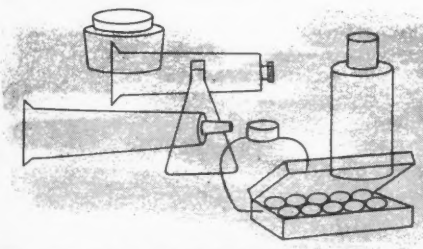

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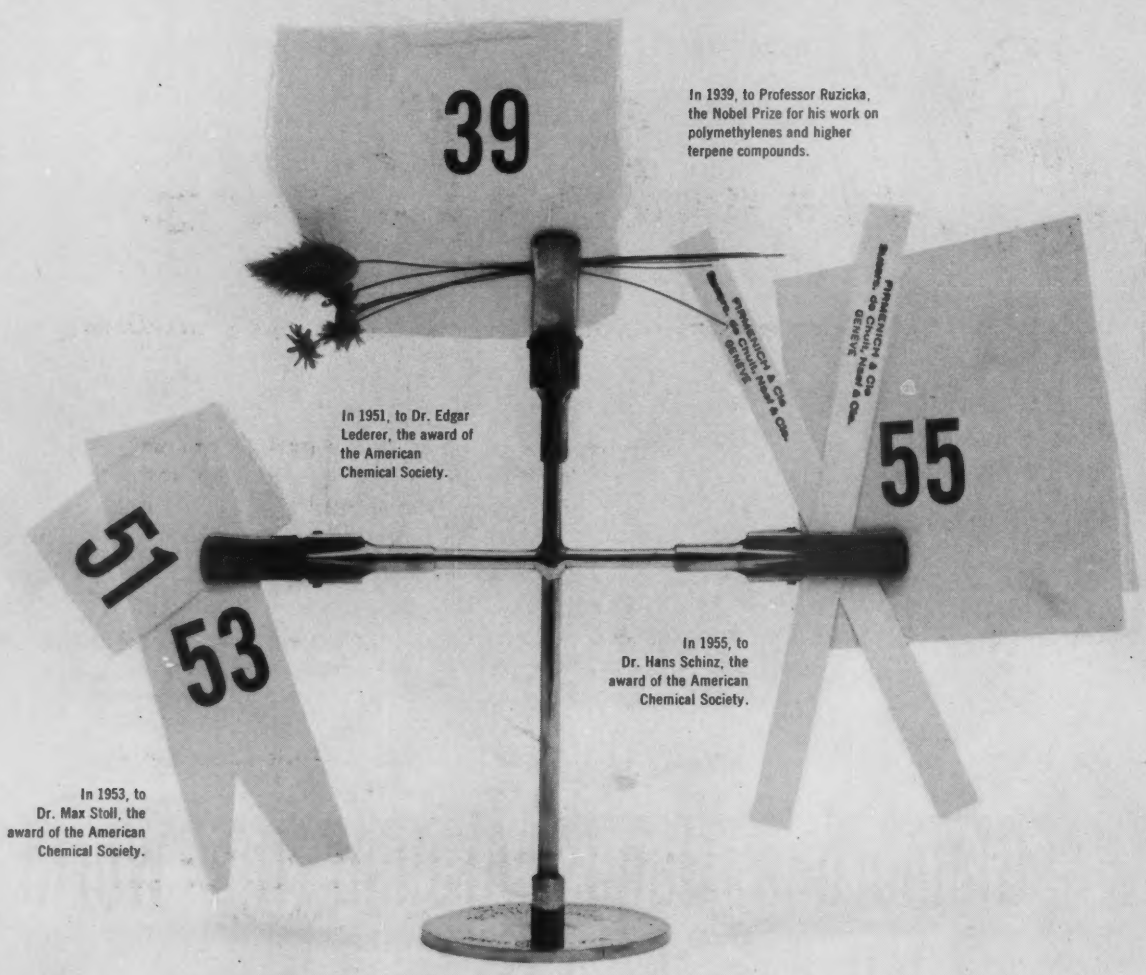
39
In 1939, to Professor Ruzicka, the Nobel Prize for his work on polymethylenes and higher terpene compounds.
In 1951, to Dr. Edgar Lederer, the award of the American Chemical Society.
55
51
53
In 1955, to Dr. Hans Schinz, the award of the American Chemical Society.
In 1953, to Dr. Max Stoll, the award of the American Chemical Society.

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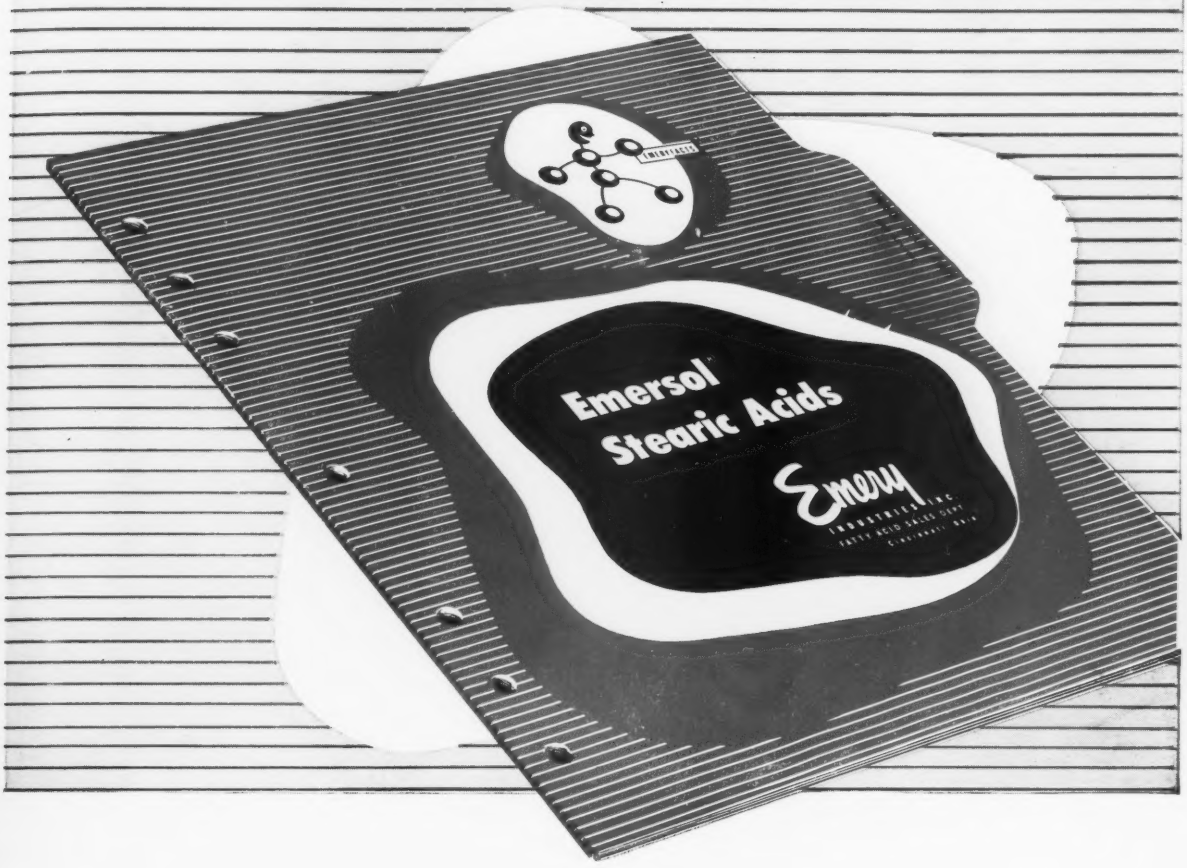

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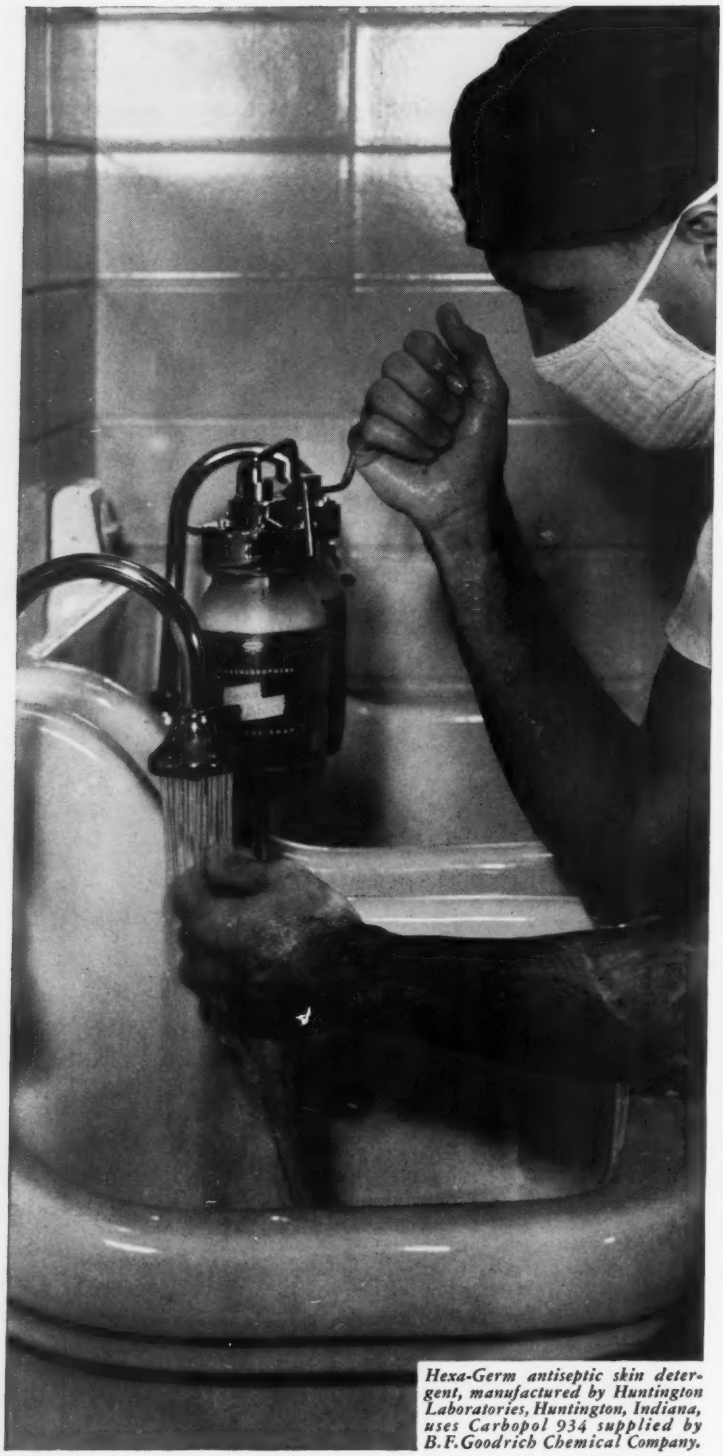

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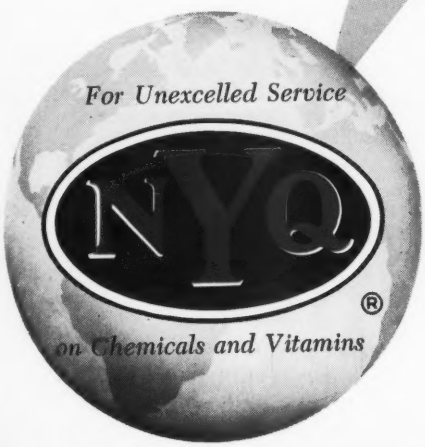

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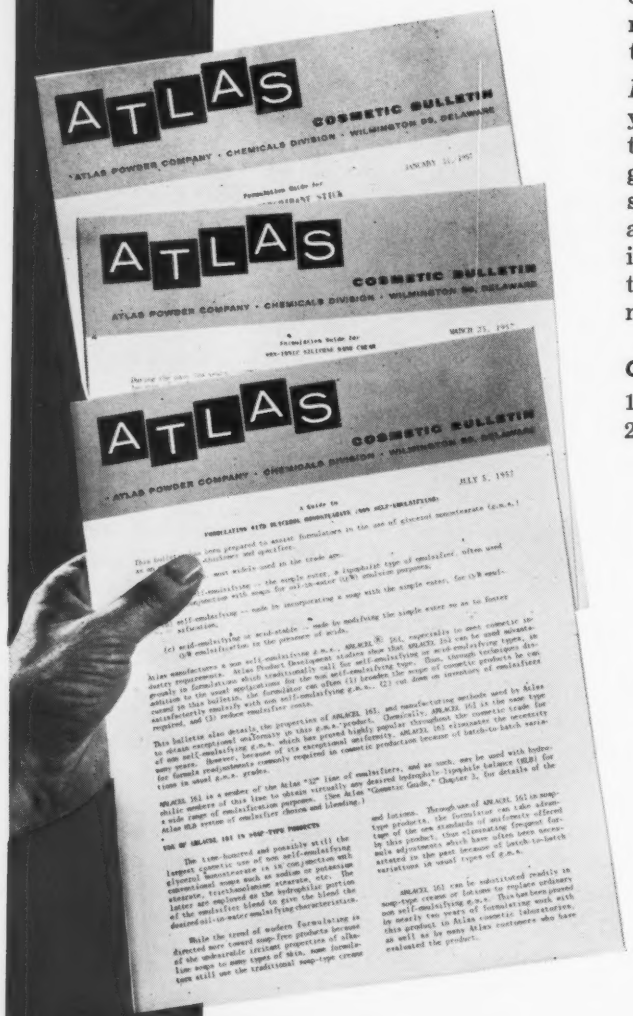
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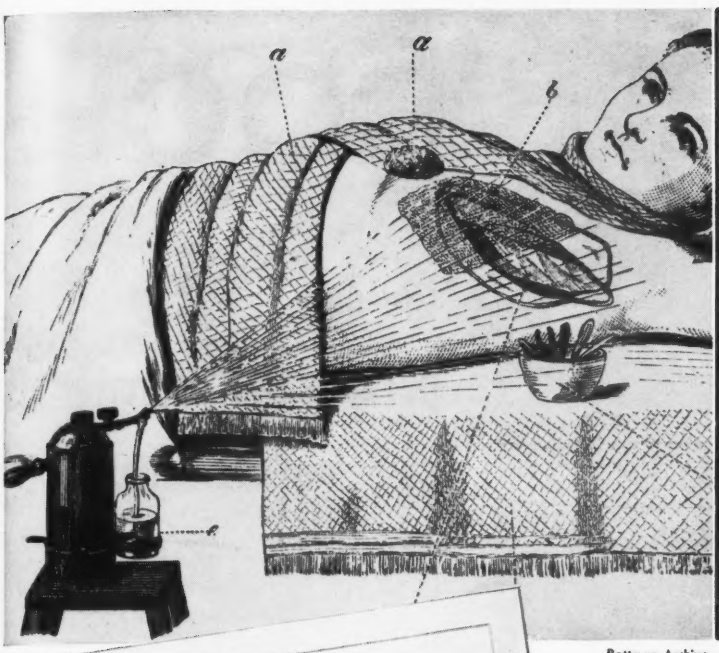

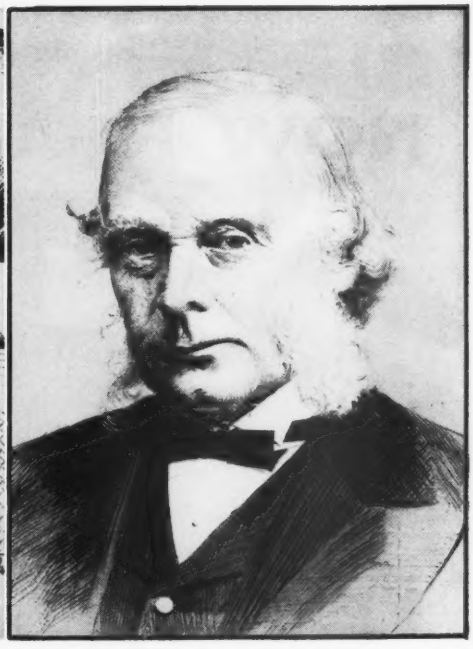

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JOSEPH LISTER (1827-1912), English surgeon noted for his founding of antiseptic surgery. Illustration shows patient being subjected to carbolic spray treatment to keep his wound purified. Towels also were soaked in a carbolic solution.

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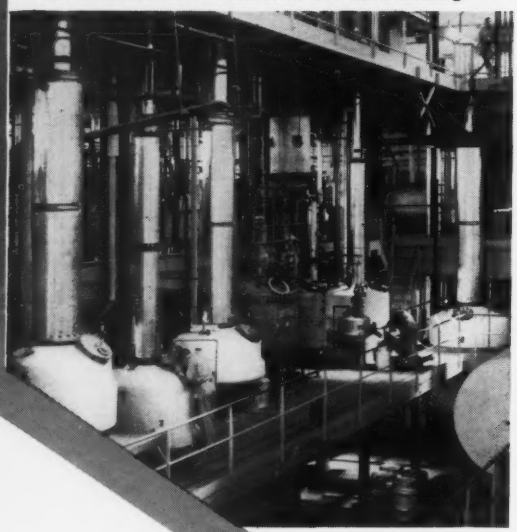

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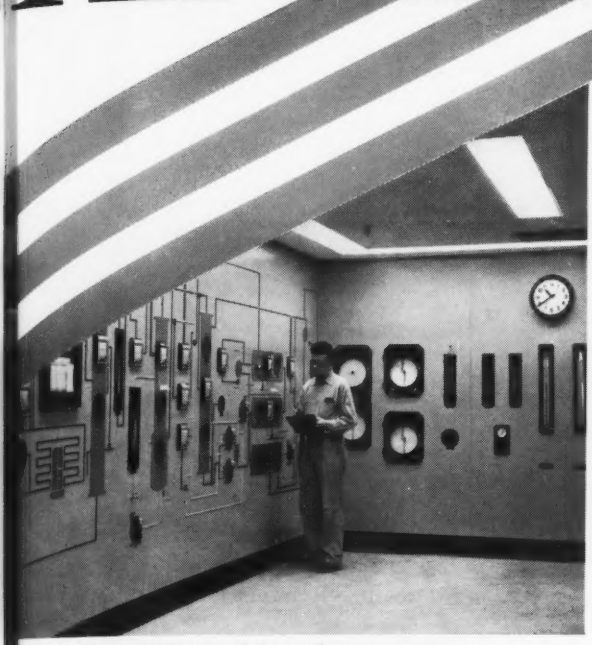

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A completely new synthetic aromatic. Possesses a soft green odor with a rose note. A good base for synthetic lavender, geranium and rose bouquet. Stable in soap.

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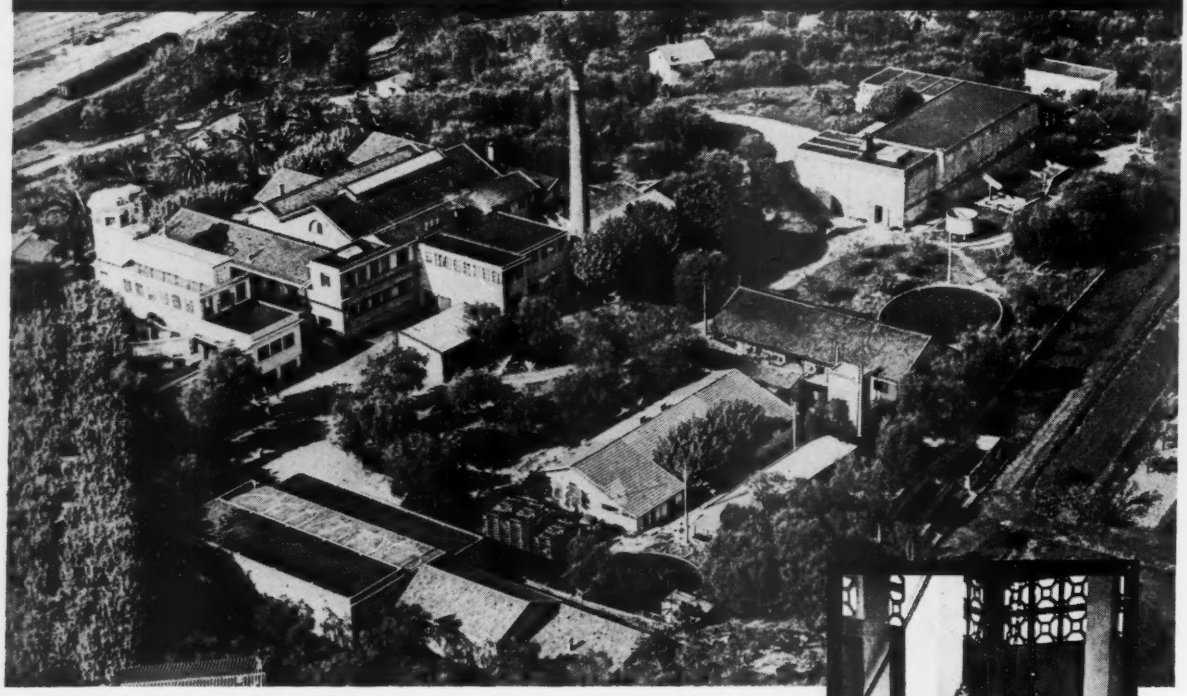

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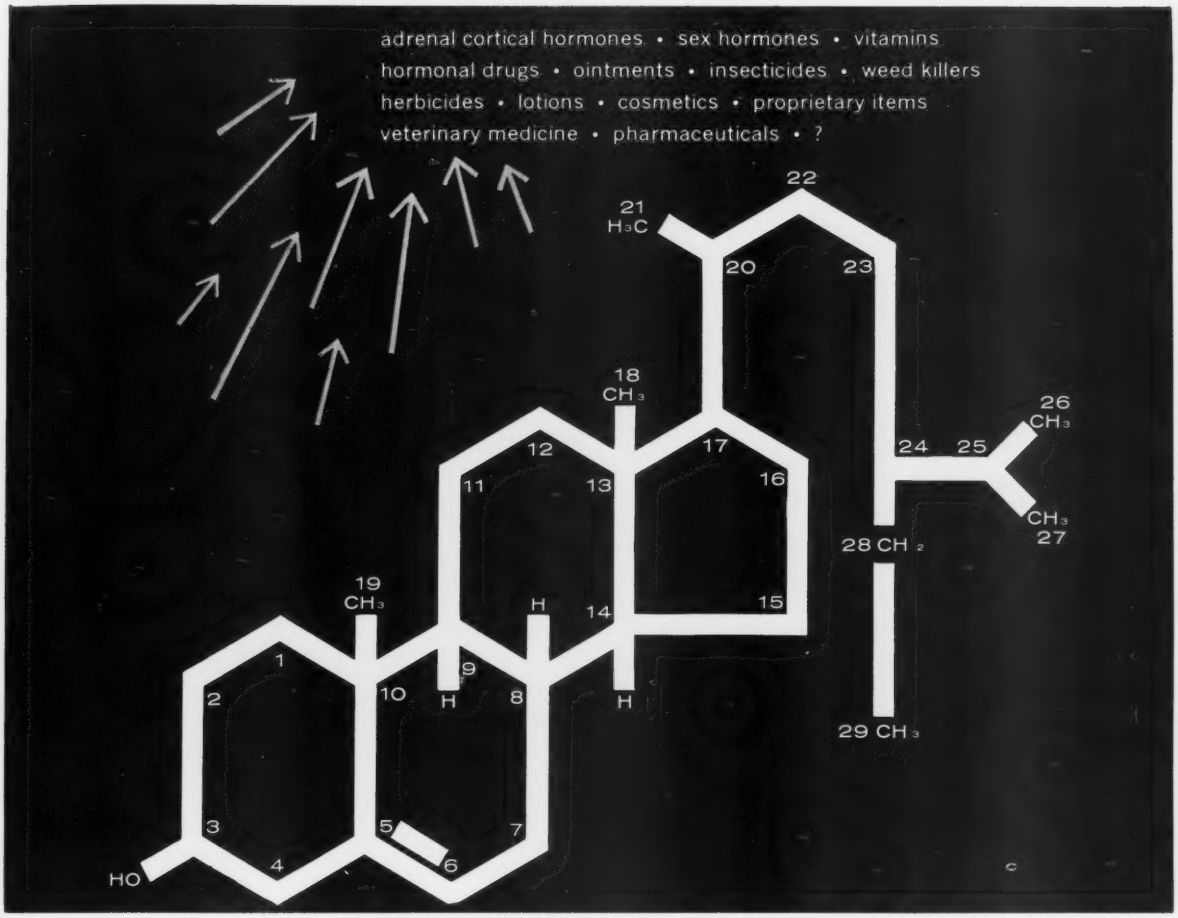

The molecular structure of sitosterol is much like that of cholesterol. It has a saturated phenanthrene ring system with completely saturated side chains attached to the ring nucleus. Main differences are in lateral chains and in the number of CH_3 groups possessed by each.

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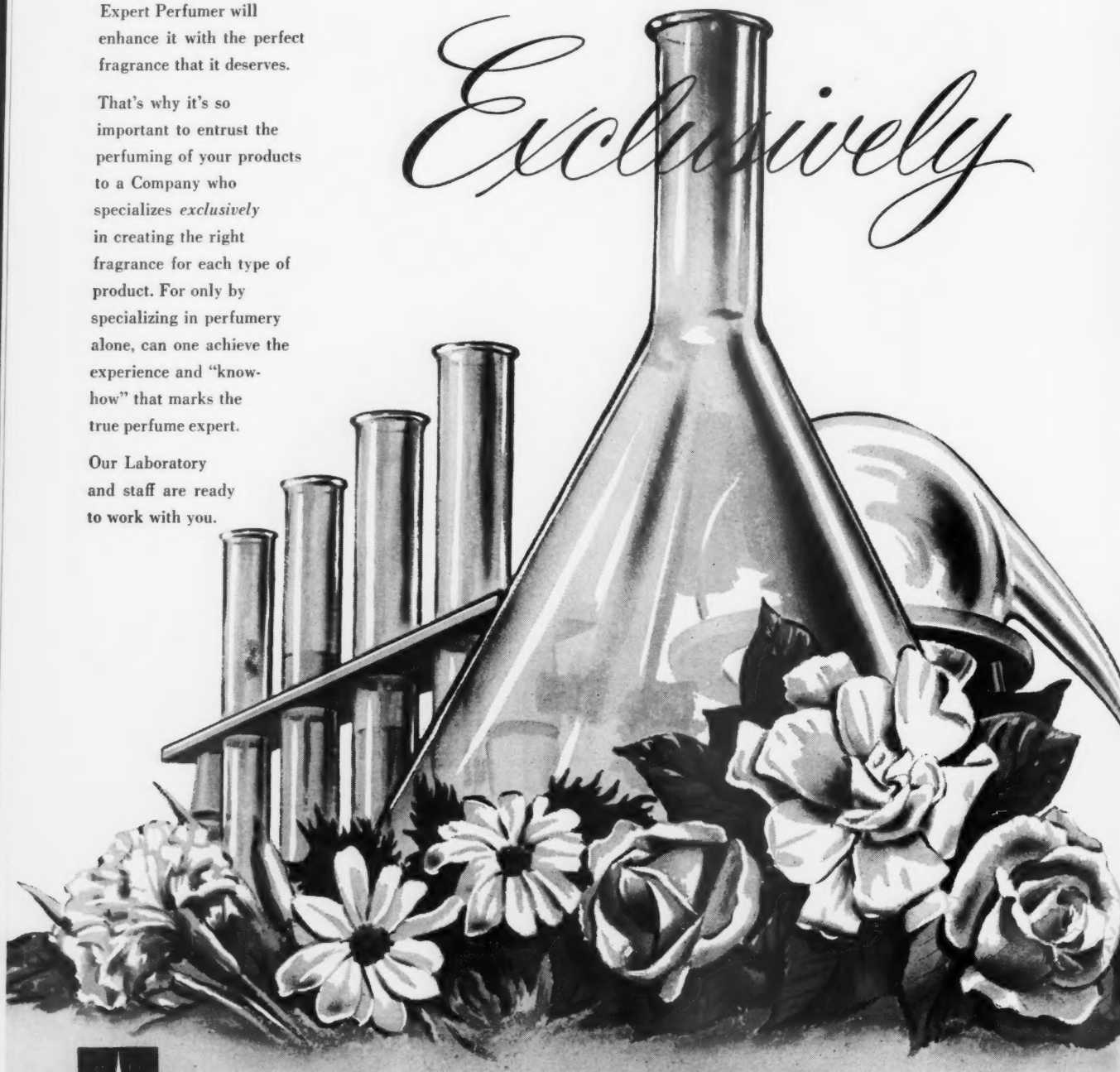

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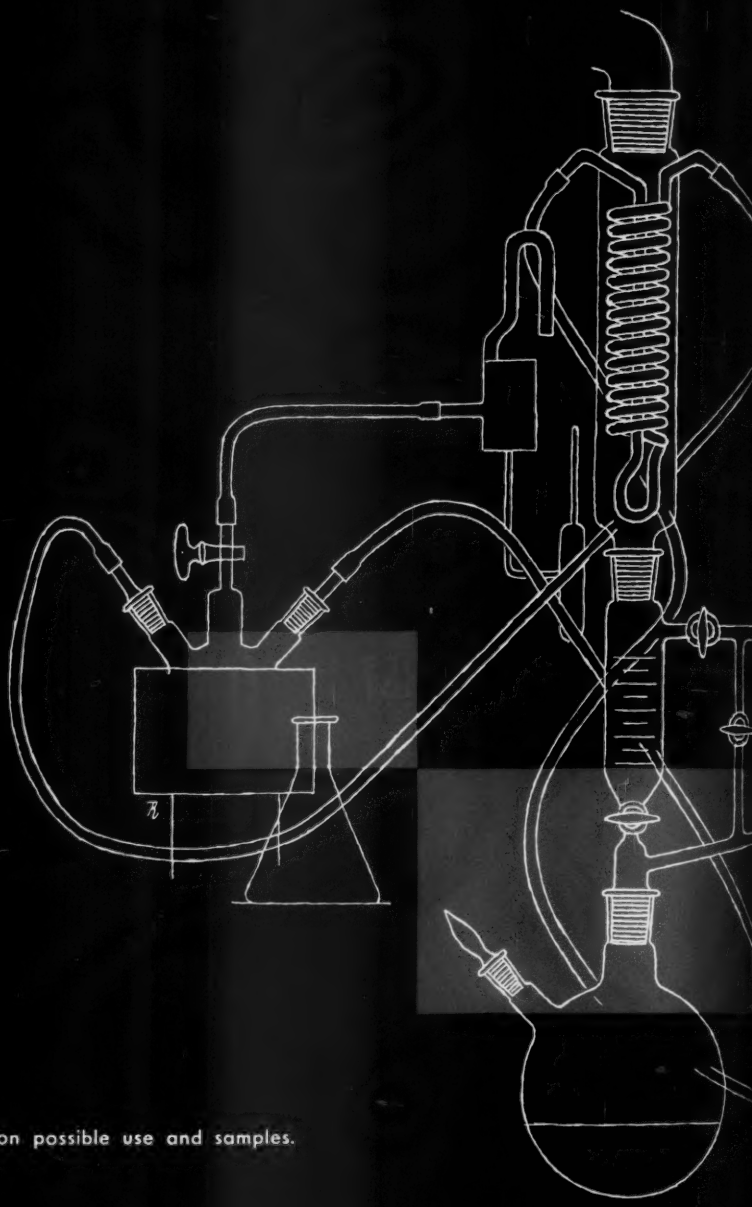
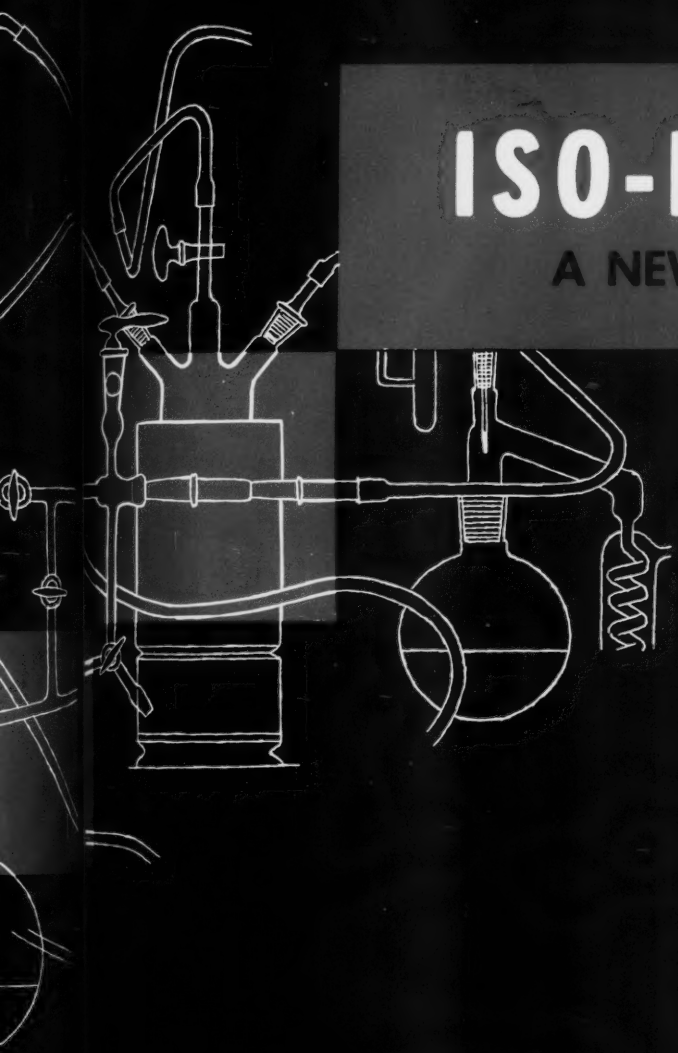


Write for chemical and physical details, information on possible use and samples.



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Keeping Posted

Carter Products, Inc.

In connection with the offering for sale of 500,000 shares of common stock, the preliminary prospectus dated July 18, 1957 reveals much concerning the operations of Carter Products, Inc.

The company operates through three divisions—Wallace Laboratories, which sells ethical drugs in the United States and Canada; the U. S. Division, which sells toiletries and proprietaries in the United States; the Export Division, which sells toiletries and proprietary products through foreign agents and to post exchanges. Other foreign business is handled through four wholly-owned subsidiaries. The new authorized capitalization is 3,000,000 shares of common stock of which 2,565,000 shares are outstanding and 125,000 shares are reserved for the Employees' Stock Option Plan.

For respective years ended March 31, the following tabulation presents part of the earnings data made available (000 omitted).

	1953	1954	1955	1956	1957
Net Sales	$11,497	$13,238	$14,580	$22,754	$41,836
Cost of goods	3,456	4,081	4,192	6,995	14,911
Gross profit	8,041	9,157	10,388	15,759	26,925
Royalties received	51	63	98	549	2,317
Advertising	4,674	5,585	5,776	8,283	14,683
Other selling expense	1,182	1,339	1,540	2,065	2,871
Research and development	156	203	231	344	733
Net Earnings Before Taxes	1,267	1,305	1,969	4,312	9,449
Net Earnings	643	678	990	2,042	4,473

The company's most important ethical products are the tranquilizer meprobamate and its combinations with other drugs. The tranquilizer is sold as "Miltown" in the United States and Canada by Wallace Laboratories, is distributed under the same name by Lederle in most foreign countries other than Canada and France, and is marketed by Wyeth under the trade name "Equanil" in the United States and most foreign countries. Meprobamate sales are believed to represent about 30 per cent of the domestic tranquilizer market. In the 1957 fiscal year, sales of "Miltown" and meprobamate powder accounted for 59 per cent or $24,683,000 of the company's sales. In the same period, commissions and royalties from the sale of meprobamate by others accounted for 84 per cent or $1,946,000 of the company's commissions and royalties. One licensee paid 92 per cent or $1,790,000 of the royalties and commissions.

Wallace recently began marketing combinations of meprobamate with an anticholinergic for gastrointestinal tract disorders and with conjugated estrogens for treating menopause, under cross-licensing agreements with Lederle and Wyeth, respectively.

In the year ended March 31, 1957, sales of toiletries accounted for 30 per cent or $12,551,000 of the company's sales and 16 per cent or $371,000 in royalties. This group includes "Arrid," the largest selling cream deodorant, and other "Arrid" products, "Rise" pressurized shave, believed by the company to be the second largest selling shaving cream, and "Nair", the largest volume depilatory.

The proprietary products consist of "Carter's Little Liver Pills" and "Colonaid," a laxative introduced in 1956, and account for 11 per cent or $4,602,000 of sales.

Foreign sales accounted for about 9 per cent or $3,765,000 of sales.

Henry H. Hoyt, the president of the company, received as remuneration $50,700 in the year ended March 31, 1957, but from July 1, 1957 his salary will be $100,000 per year for five years. Philip Richardson, vice-president for sales and advertising, received $48,000 with an additional $54,000 deferred payment accrued under the Executives' Additional Compensa-

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. . . maybe it's up to you to review your arithmetic.

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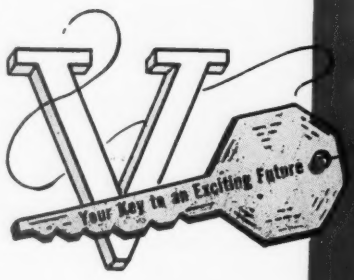

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tion Plan. Frank M. Berger, M.D., vice-president for research and development received $35,500, with $18,000 deferred payment accrued. In addition, Dr. Berger received $112,924 as a percentage of sales of meprobamate and its combinations. Arthur E. Lindstrom, vice-president and controller, received $39,271, and deferred payment of $65,313.

Abandon Cyanamid-Norwich Merger

Negotiations looking toward the acquisition by American Cyanamid Company of the business and assets of The Norwich Pharmacal Company have been "regretfully abandoned." The announcement was made jointly by Kenneth C. Towe, President of Cyanamid, and Melvin C. Eaton, chairman of Norwich, and George W. Bengert, president, of Norwich. They stated that the managements of both companies had "reluctantly come to the conclusion that further discussions would be fruitless because of insurmountable legal problems that had arisen."

U. S. Cancer, Mental, Heart Research

The following comments on medical research made by the Senate Committee on Appropriations should prove extremely interesting to pharmaceutical manufacturers:

"*National Cancer Institute:* The committee recommends $58,543,000 for activities under this appropriation, an increase of $11,641,000 over the House allowance and the budget estimate. The committee wishes to make available the funds for support of all scientifically worthwhile research in this field.

"The possible relationship between viruses and cancer is one of the most intriguing and potentially valuable research leads of recent years. It is far too early to assess the significance of this relationship, but a new lead exists, and it should be actively and adequately pursued.

"From testimony in the hearings, the committee has noted many similarities in the philosophies, approaches, and the actual substance of research utilized by scientists seeking curative drugs for cancer and for virus diseases. Both groups wish to discover factors which will slow down growth of unwanted and harmful cells or living particles. The committee suggests that the National Cancer Institute assist the two groups in a joint approach to their problems. Since much money and effort are devoted to obtaining the numerous chemicals, antibiotic beers and related substances being tested for anti-cancer effects, it is logical and economical to explore the potential value of these same materials against the viruses of influenza, poliomyelitis, and a host of other virus diseases for which currently there is no curative drug.

"It is clear to the Committee that collaborative work between the staffs of the National Cancer Institute and the National Institute of Allergy and Infectious Diseases is productive and should be extended. The committee approves such joint work, and will expect to be informed of the progress of such research in the annual report on general development of NIH programs.

"The committee has consistently supported an expanded program of cancer chemotherapy. In view of the priority accorded to this program, the committee considers that progress in making industrial contracts for cancer chemotherapy work has been unnecessarily slow. The committee directs that the utilization of industrial facilities for this program be expedited, and provides an additional $7 million specifically for this purpose.

"In this connection, the committee is fully aware that it is providing funds for research, the outcome of which is unknown. On the judgment of those who are scientifically most competent the committee is fully willing to risk the investment on the ground that the chance of a big payoff is a reasonable one. Such risks are inherent in research.

"*Mental Health Activities:* The committee recommends $39,421,000 for activities under this appropriation, together with $4,573,000 in unexpended balances from the fiscal year 1957. The total of $43,994,000 is an increase of $8,777,000 over the House allowance and the budget estimate.

"Most notably, the widespread use of tranquilizers has resulted in an estimated 7,000 fewer mental patients in the public hospitals of the nation in one year's time. It is of the utmost importance that the values and limitations of these drugs be established in order that their full potential may be realized, and the Congress have given active encouragement and support to this program. The committee was disappointed in the delays encountered in establishing a full-scale drug evaluation program. This period is now passed, and a productive approach for the future is how the program for evaluating drugs which affect mental states can be moved forward most effectively.

"The committee notes that the expanded psychopharmacology program has gotten off to a good start this year. A total of $2,260,329 has been spent both for the research program carried on by the National Institute of Mental Health in Bethesda and for grants and fellowships supporting research projects throughout the country.

"These projects include clinical studies of the effectiveness of various tranquilizing drugs as well as basic studies on the mechanisms of drug action and the development of more effective methods of screening drugs and evaluating the biological and psychological changes which they induce.

"Seventy research projects totaling $1,140,750 will have been supported this year. A total for 1958 of $978,035 supporting 53 new and continuing projects has already been approved. In addition, 9 projects totaling $313,469 have received preliminary review and approval.

"It is expected that an additional 35 projects will be supported in 1958 for a total program supported from 1958 research grants funds in excess of $2,000,000.

"Including intramural research, technical assistance, and the cost of the psychopharmacology service center, the outlay for the whole psychopharmacology program will exceed $3,000,000. The committee recommends funds at this level for this critically important program.

"Research in other areas continues to be productive. The Addiction Research Center is continuing its program to determine the addicting qualities of newly

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developed pain-relieving drugs. Last year, 14 such drugs were evaluated, 11 of which had some addicting liability.

"*National Heart Institute:* The committee recommends $38,784,000 for activities under this appropriation, an increase of $5,348,000 over the House allowance and the budget estimate.

"The steady increase in congressional appropriations for research in heart disease has been followed by a growing stream of productive research findings. As is true in cancer and other fields, these advances are difficult to cite as discoveries made in any one year. New drugs and new surgical techniques, for example, are typically developed over a period of years rather than discovered at one time in their ultimately usable form.

"Research in the field of hypertension has resulted in greatly improved treatment and management of patients with high blood pressure, particularly through drug therapy. While the ideal drug has not been found, a number of drugs have been developed which lower the blood pressure effectively. The use of these agents, singly or in combination, is constantly being improved.

"The committee is also impressed by testimony pointing out unexploited opportunities to discover and evaluate natural products, both animal and plant, useful in understanding and controlling hypertension. Studies started during the past year in hypertension should result in a better use of drugs already available. Witnesses noted, however, that such investigations do not bear directly on the ultimate understanding of this condition. The committee also agrees with witnesses who question whether the studies on the metabolic and hormone basis of arteriosclerosis are being exploited to the fullest extent. Funds are recommended for studies in such areas, as well as those being more thoroughly explored."

In conference, the House and the Senate agreed on a total appropriation for the National Cancer Institute of $56,402,000, of which $6,400,000 is for contracts in the cancer chemotherapy program; $39,217,000 for "mental health activities"; and $35,936,000 for the National Heart Institute.

Diseases Not Controlled

Commenting on the numerous gains in medicine in recent years, Dr. Theodore G. Klumpp, president of Winthrop Laboratories, in a recent address before the Connecticut Pharmaceutical Association, said:

"But our job has just begun. The gains that I recited resulted largely from our accomplishments in one sector of the ugly panorama of diseases that afflict mankind. There are still bacteria that haven't been mastered, and it is likely that the appearance of new mutants will keep us busy in this field for a long time. Although the conquest of one of the meanest diseases of them all—poliomyelitis—now appears within sight, there is still a whole host of virus diseases that are as yet untouched. Cancer is still a murder mystery to which there is not a single basic clue. We have a good palliative for diabetes but we still don't understand the basic pathogenesis of this disease. The death rate from it remains essentially unchanged. A whole host of endocrine, mental and neurological disturbances still defy our best research brains. Arteriosclerosis, the greatest killer of them all and the ultimate limiting factor in our life span, is still beyond our grasp. There is no doubt that our scientists have plenty left to do, and so long as mother nature fails to create and maintain perfectly functioning bodies, she will need the combined research help of our physicians and the pharmaceutical industry. . . .

"Never before in the history of medicine have there been so many therapeutic agents placed at the disposal of the practicing physician. If the artist's conception of the old time doctor was that of a dignified gentleman in frock coat with his chin in his hand, the typical pose of the present day doctor is something quite different. Today he might be pictured as a slightly distraught and perplexed man in white sitting at a desk piled high with drug brochures and beside him is a waste basket filled to overflowing with drug advertisements, most of which are in unopened envelopes.

"All this may seem like an abomination to the doctor of today. Actually what seems to be a torrential over-abundance—and I agree in some respects it is—is merely the outward manifestation of the greatest decade of industrial and productivity this world has ever seen. For all of its woes I would rather be deluged with more drugs than I knew how to use than be forced to sit at the bedside with my chin in my hand because there aren't enough drugs to save lives or at least bring comfort, ease, and relief of pain to my patients."

Vitasafe Decree

A consent order prohibiting Vitasafe Corporation, New York, from advertising a deceptive free trial offer in order to sell its vitamin capsules was approved by the Federal Trade Commission. Persons taking a "free trial" offer were mailed additional monthly supplies and billed for them, according to the FTC. The order prohibits the company from representing it is offering something free when this is used as a means of enrolling persons in a plan whereby they receive monthly shipments, unless the conditions of this plan are set out. Further, the company must not ship additional merchandise or try to collect payment for it when customers have exercised the right to refuse these shipments. Nor must the company refuse to cancel orders for undelivered merchandise when customers have, by right, given the required notice of cancellation.

Manufacturer Stopped

In an interesting case the U.S. Court of Appeals for the Second Circuit reversed the decision of the U.S. District Court and enjoined a manufacturer from suggesting to druggists that its products could be substituted for those of The Upjohn Company when the latter are prescribed by physicians. This decision, by a three judge court, was in the case of Upjohn v. David Schwartz, doing business as Bryant Pharmaceutical Corp., New York.

In describing the substitution, the court said: "In ordinary commercial affairs 'substitution by decep-

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tion' is wrongful, but when in the healing arts there is substitution by deception, greed may reach the grade of malice."

Cited in the decision were six Upjohn products: Unicap, Zymacap, Cebefortis, and Ferrated Liver Concentrate, all diet supplements for specific conditions; Cheracol, for cough relief; and Kaopectate for treatment of diarrhea.

Pharmacy Awards

Lunsford Richardson Pharmacy Awards totaling over $8,000 were presented recently to pharmacy students and Schools of Pharmacy representing the four geographical regions of the United States. The awards, designed to encourage pharmacy students to "explore and investigate current problems of pharmacy," are presented annually by the Vick Chemical Company. First prizes of $1,000 each went to: Robert A. Nash of the University of Connecticut for a paper on The Oxidation Potentials of Antioxidants in Drug Stabilization; Alexander H. C. Chun and Robert S. Joslin, co-authors, of Purdue University for a paper on The Application of Hydrophile-Liophile Balance to the Principle of Mixed Emulsifying Agents; Donald E. Cadwallader, Jr. of the University of Florida for a paper on Some Physical and Biological Factors Involved in Intravenous Formulations; and Gerhard Levy of the University of California for a paper on The Relation of Method of Preparation to the Viscosity and Stability of Tragacanth Solutions. The respective schools of the winners received an equal amount. Honorable mention awards of $100 each were presented to Paul M. Meer and Norman L. Henderson, co-authors, of Temple University; James E. Tingstad of the University of Wisconsin; John J. Sciarra of the University of Maryland; and Earl P. Siechert, Jr. of the University of Southern California.

Eastman Enteric Patent Expires

Eastman Kodak Company has announced that its U.S. Patent on cellulose acetate phthalate enteric coated medicants has expired, that the corresponding Canadian patent is about to expire, and that a license for the manufacture of these products under these patents is no longer necessary. Distillation Products Industries, Division of Eastman Kodak Company, will continue to supply the enteric coating material to the pharmaceutical industry in the form of a free-flowing powder.

Legalizing a Common Practice

In the Appropriations Act for the Department of Health, Education, and Welfare, which has been approved, the act, for the first time, gives authority to non-federal agencies, organizations, and individuals to cover the cost of attendance of government officials at appropriate meetings. This has long been a practice of associations in this industry, but the industry welcomes Congressional approval of the procedure. Associations often are desirous of having present at their meetings officials of regulatory agencies, but government budgets and per diem allowances do not adequately cover the expenses which these agency officials entail at such meetings. Therefore, the association generally picks up the tab.

Cosmetic Seminar

The Fourth Seminar of the Society of Cosmetic Chemists, announced by Joseph Kalish, chairman, will take place in Chicago on Thursday and Friday, September 19 and 20, 1957 in conjunction with the celebration of the Tenth Anniversary of the Chicago Chapter. As in past seminars, three half-day symposia will be presented, each consisting of a number of papers by outstanding authorities and known experts in the field. The three topics to be presented are: Biological Aspects of Skin and Hair Pigmentation; Laboratory Methods for Product Testing; Microscopy.

Presentation of the papers will take place in the ballroom of the Edgewater Beach Hotel in Chicago and the two luncheons, dinner and cocktail party will be held in the ballroom, Michigan Room and Polynesian Room.

The cost of this Seminar has been set at $25 for members of the Society of Cosmetic Chemists and $30.00 for non-members. Attendance will be limited to 250 and reservations will be made upon receipt of check or money-order payable to the Society of Cosmetic Chemists, 2 East 63rd Street, New York 21.

Will Not Grow Hair

In a complaint brought against Merrill Hair & Scalp Consultants, Oklahoma City, and Kelvex, Inc., doing business as Hair Consultants of Washington, Spokane, Washington, the Federal Trade Commission charges that the companies have advertised that "if every man and woman will follow our directions faithfully during treatment and after finishing treatment, there is no reason why they will not have hair all the rest of their lives." Other quoted advertising claims declare: "I have been told that you cannot grow hair on a bald scalp. Merrill is doing it! The treatment should go on the records as the greatest discovery of all times," and "If there is any sign of fuzz, no matter how short or colorless, there is a definite chance that hair may be re-grown in time." The complaint states that "the great majority of cases of baldness and excessive hair loss is the common type known as male pattern baldness." It then adds: "Regardless of the exact formulae or combination of ingredients of the preparations, or the method of application, the use of said preparations will not in such cases 1) prevent or overcome baldness or excessive hair loss; 2) induce new hair to grow or cause hair to become thicker; 3) enable an individual to maintain a full head of hair."

Physicians and Food Additives

Dr. Clive M. McKay, a chemist who is Professor of Nutrition at Cornell University, recently urged physicians vigorously to support proposed legislation to control chemical additives to foods. Acting as moderator at a panel discussion of the American Geriatrics Society, Dr. McKay said that the industry's production of "sophisticated" foods to appeal to housewives should be regulated. He said that the public was not generally aware that millions of dollars were spent to make food more "sophisticated and

easy to manufacture," but that little was spent to study the nutritional values of food products.

During the panel discussion, Dr. Norman Joliffe, director of the Bureau of Nutrition of the New York City Department of Health, suggested that perhaps pediatricians of a few decades ago should be blamed in part for the large number of heart attacks among young men today. He said that pediatricians who used to prescribe feeding formulas with too much fat in them might have laid the groundwork for the high fat intake among young adults. Those who are used to eating fat continue the practice, he said. Dr. Lee E. Farr, medical director of Brookhaven National Laboratory, reported that degenerative diseases of the heart, arteries, and nervous system that afflict older people are being studied with "significant technical advances" resulting from use of radioactive trace elements. In high blood pressure and hardening of the arteries, he said, radioactive isotopes offer a method of study not previously available.

Breck Gets Key of Achievement

John H. Breck, Inc., shampoo and hair preparations manufacturers, was recently presented with the Key of Achievement Award by the Student Market Institute at the fourth annual Student Market Clinic held in New York. It was stated that the award was given in recognition of the firm's awareness of what young people want to see, hear or read before exercising their freedom of choice in America's free markets. Breck was further selected because of their outstanding youth-and-educational advertising and promotional programs which contributed to its success in selling the multi-billion dollar student market.

The Breck campaign selected by the judges consisted of:

1. The use of two educational films designed for viewing by Home Economic classes in Junior and Senior High Schools.
2. Consistent advertising in American Girl Magazine, Seventeen Magazine, and similar publications, plus the offering of Good Grooming kits to home economic teachers, Girl Scout leaders, and college instructors.
3. Making available Good Grooming booklets to the Girls Clubs of America and similar groups.
4. Making available of folders on Hair Care to teen-age groups.
5. Local public relations activities which include:
   a. Junior achievement activities.
   b. Plant tours for students and boys and girls organizations such as the Girl Scouts and Boy Scouts.
   c. Making available a trained lecturer on Hair Care for talks on Good Grooming and Hair Care at the Junior and Senior High School levels.
   d. Advertising in student publications.

Edward J. Breck, president of the firm, said that the films of the firm were shown nearly 4,000 times during 1956 to an audience of approximately 300,000 students and teachers. One particular film was also made available to television stations and on one occasion was viewed by an estimated five million people.

Warner-Lambert Outlook

An increase in sales to $170 million for 1957 was recently forecast by Elmer H. Bobst, chairman of the board of Warner-Lambert Pharmaceutical Company. He said he anticipated a ten per cent increase over the record sales volume of $153 million for 1956. "Scientific advances in 1956 by the company opened up new opportunities for increasing the company's ethical and pharmaceutical business," he said. "The Warner-Chilcott Laboratories Division recently introduced four important products: Sterisil, an antiseptic compound with a mechanism similar to an antibiotic for treating certain types of serious infections; Plestran, a thyroid and hormone compound for combatting the aging process; and Releasin, a new hormone which is serving to prevent premature birth. The latest, and one of the most important contributions to medicine is Pacatal, a drug which possesses a deep tranquilizing influence. Its great advantage over other drugs of this nature widely used in treatment of mental diseases is that, while it quiets the patient, it does not dull his mental activity. The patient is alert and can respond to psychiatric treatment," he added.

T.G.A. Convention to Poland Springs

Proposals have been made during the past year to move the annual convention of the Toilet Goods Association from New York to Miami, Florida. However, officials of TGA expressed surprise at opposition to such a move voiced by members during the recent meeting in New York. The opposition given expressed two principal reasons:

1. Miami is too far away from New York for the first out-of-town convention in over thirty years, and
2. The cost of going to Florida for the convention is too high for the average member.

Following this a mail vote was taken of the TGA Board of Directors and the decision was to hold the 1958 convention outside New York but within a more reasonable distance than Miami. Therefore, arrangements have been made to hold the next meeting at the Poland Spring House, Portland, Maine for arrival Wednesday, June 25, and departure Sunday, June 29, 1958.

This does not apply to the meeting of the TGA Scientific Section which will be held at the Waldorf-Astoria Hotel, New York, on Thursday, June 5, 1958.

Hair and Scalp Claims Banned

The Federal Trade Commission approved a consent order last month which prohibits Drake Laboratories, Detroit, from advertisng that its hair and scalp preparation, Persulan, will prevent baldness or grow hair without disclosing that the preparation is of no value whatever in the great majority of cases. In addition to prohibiting unqualified claims concerning prevention of excessive hair loss or baldness and growth of new hair, the order prohibits claims that the product will permanently eliminate dry, brittle, splitting or breaking hair or dandruff; restore scalp health; or have any effect on skin lesions, itching scalp, ringworm, tetter, eczema, or other skin irritations or ailments in excess of affording temporary relief of scaling and itching.

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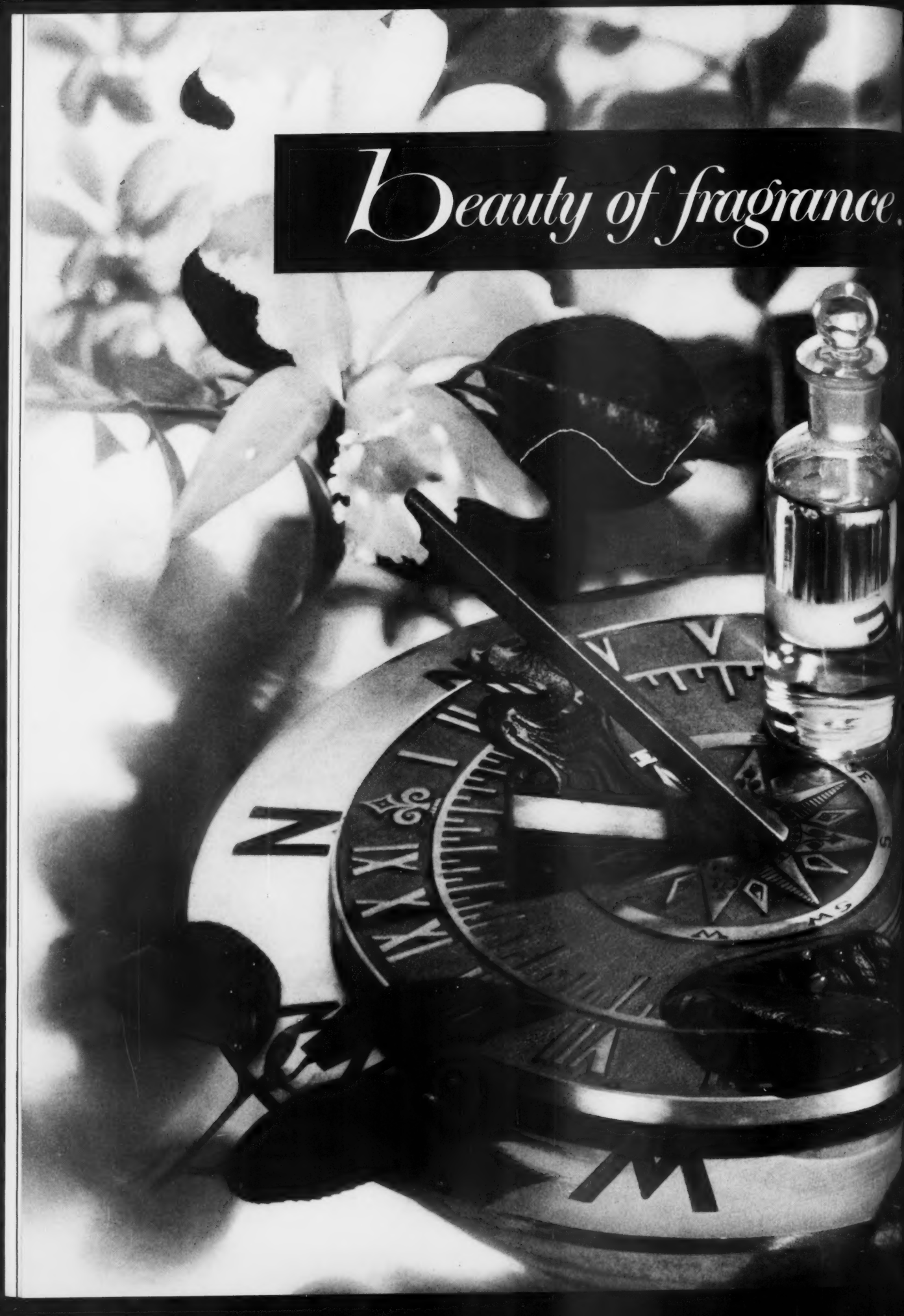
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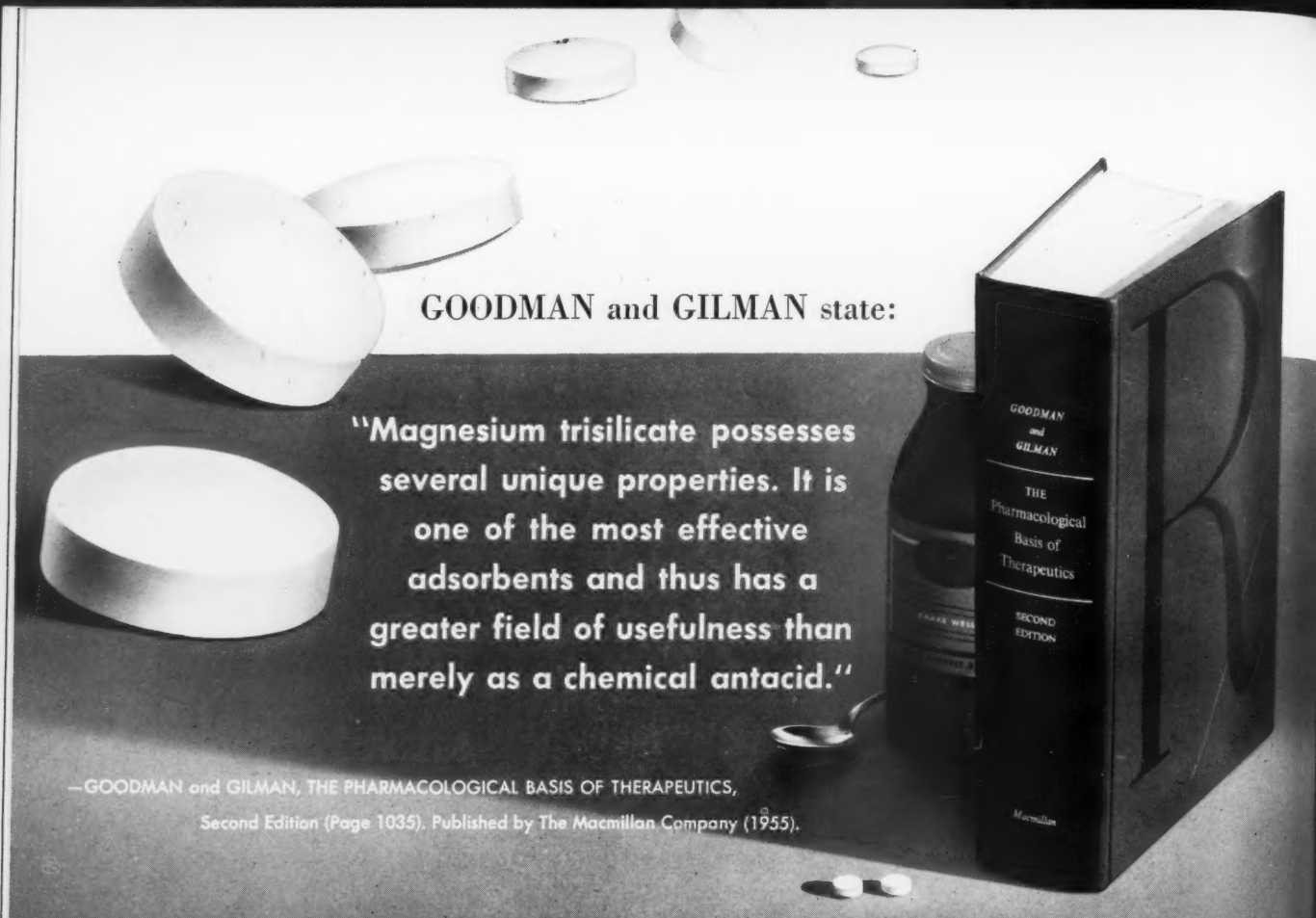
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FOAMING AGENTS in Cosmetics

by Karl Bergwein, DRAGOCO HOLZMINDEN

In the production of shampoos, foaming agents find their widest field of application in cosmetics. About a quarter of a century ago foaming agents free from soap and alkali salts were first used for shampoos instead of the liquid soaps previously employed. From then on these new foaming agents, now generally known as synthetic detergents began to be widely used in the field of cosmetics, too.

For many centuries soap has been the most nearly perfect cleansing agent, as well as the one most in demand, and to this very day it has not been equalled in its total cleansing effect by any other cleansing agent.

Unfortunately, soap has two disadvantages:

1. Hard water causes the formation of insoluble lime soaps because of the carboxyl group in soaps.

After shampooing, lime soap is deposited on the hair and makes it dull and lustreless.

2. The second disadvantage is the hydrolysis of the alkali salts of fatty acids. As salts of strong bases and very weak acids, soaps undergo hydrolysis in aqueous solution, which makes the solution strongly alkaline, and is often troublesome.

Protein fibres (wool, pure silk) are attacked by soap suds. White silk and white wool turn yellow, wool fabrics become felted, losing their elasticity. It is well known that albuminous substances are partially decomposed by heating with alkaline substances.

As shampooing is done with warm soapsuds, the alkaline soap suds cause the hair to swell. In time the hair is reduced in strength and loses its elasticity. Successful attempts have been made to minimize these two disadvantages of soap, and the low resistance to hardness in water has been improved by adding ortho, pyro or metaphosphates and polyphosphate complexes.

After the hair has been washed, an acid rinse is used to remove the remaining alkaline substances from the hair; thus the natural gloss of the hair is preserved.

Solutions of genuine soaps do have advantages over synthetic detergents, such as high emulsifying power, dirt absorbing capacity, greater wash reserve and higher loading capacity of the bath. Despite this, however, as well as the technical improvements of their utility mentioned above (improved hard-water stability etc.), it has not been possible to maintain the predominant position of soap in the field of cosmetics.

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As the ionic synthetic detergents are chiefly salts of strong acids with strong bases, no hydrolysis takes place. Their interfacial tension and thus their dispersing power is greater and they possess better wetting power. The formation of insoluble lime deposits is almost entirely prevented. In addition to this the synthetic detergents keep their characteristic qualities even in an acid bath, which is a great advantage in shampooing.

Among the foaming agents for shampoos based on active detergents the following are especially well-known:

Fatty alcohol sulfates, anionic (FAS/a). They are the primary alkyl sulfates which, through sulfation of lauryl alcohol with sulphuric acid and other sulfating agents in the presence of solvents and catalysts, are obtained as lauryl alcohol esters of sulfuric acid. They are neutralized with alkali or triethanolamine.

Alkyl aryl sulfonates (AAS/a). Among these, only long-chain alkyl aryl sulfonates are used for shampoo agents. They are produced by chlorinating long-chain

hydrocarbons of the Fischer-Tropsch synthesis containing 12 to 15 carbon atoms. These chlorine compounds are then condensed with benzene in the presence of aluminium chloride. After the distillation of the alkyl benzene the latter is treated with sulfonating agents and converted to the sulfonates by using the customary neutralizers.

More recently, alkyl sulfonates have also been produced by polymerizing gaseous olefines, e.g. propylene at a pressure of 555 psig in the presence of ortho phosphoric acid, in which process hydrocarbon chains of varying length are obtained. This, in the United States and Germany, the tetramerization of propylene and the ensuing alkylation with benzene produces alkyl benzenes as raw materials for alkyl aryl sulfonates.

Alkyl sulfonates (AS/a). Gaseous chlorine and sulfur dioxide are made to react in the presence of light and catalysts on petroleum hydrocarbons or hydrocarbons from the Fischer-Tropsch synthesis, or saturated fatty acids. After that they are neutralized with sodium or potassium hydroxides or ammonia.

After neutralization these monosulfochlorides are separated from unconverted material by diluting the saponification products with water. The sodium chloride produced is separated by concentration of the alkyl sulfonate.

Fatty-acid condensation products (FCP/a). These are produced by the action of sulfochlorides of fatty acids on decomposed proteinic substances. Instead of sulfochlorides of fatty acids, aliphatic or aromatic sulfonic acids can also be employed as e.g. alkyl sulfonic acids or alkyl-aryl sulfonic acids. These synthetic detergents are known to be especially easy on skin and hair.

These foaming agents used for shampoos are superior to the soaps used in the past in the following respects:

They possess, even at low concentration, e.g. 1:10 in water, good detergent and wetting powers. They produce lather even in hard water and do not form insoluble lime soaps.

The hair possesses a silky feel and natural sheen after washing. As these products can be adjusted to neutrality, the hair and the scalp are not attacked. The aqueous solutions of these detergents are to a great extent acid and alkali resistant.

As these synthetic detergents show strong fat-removing power, regreasing agents are added to the shampoos, e.g. ethanolamides of fatty acids, aliphatic alcohols (oleyl alcohol), isopropyl myristate ropolyethylene glycols.

Isopropyl myristate is a valuable replacement for the hair oils removed during shampooing. Addition of one per cent is sufficient. When added to FAS, turbidity occurs, but upon further stirring the detergent becomes clear. In AAS 1 per cent isopropyl myristate dissolves at once to a clear solution. If isopropyl myristate is previously mixed in the ratio of 3:7 with a surface-active agent, e.g. with Tween 80, all active detergents for shampoos mentioned above will produce a clear 3 per cent solution.

Foaming agents are frequently combined in shampoos to counteract the reduced lime stability in aqueous dilution inherent in some active detergents. A few practical formulas illustrate this:

Liquid Shampoos

Triethanolamine lauryl sulfate (FAS)	30	70	25	50	10
Alkyl aryl sulfonate (AAS)	20		50		50
Proteinic condensate of fatty acids (FCP)		30	25	20	10
Water	50			30	30
	100	100	100	100	100

Liquid Shampoos for Aerosols

Sodium lauryl sulfonate paste	350	400
Isopropyl myristate	10	10
Polyethylene glycol 400 stearate	30	40
Zinc stearate		10
Perfume oil	3	3
Water	607	537
	1000	1000

Mix 90 parts of the shampoo with 10 parts of propellant mixture.

Liquid Emulsion or Cream Shampoos

Alkyl aryl sulfonate 60 per cent	565	
Sodium lauryl sulfate paste		150
Isopropyl myristate	10	10
Diethylene glycol stearate	85	
Polyethylene glycol 400 distearate		30
Zinc stearate	10	20
Egg lecithin	10	
Water	320	190
	1000	1000

Cream Shampoos

Sodium lauryl sulfate paste	500	250
Alkyl aryl sulfonate 60 per cent AD		250
Stearic acid	50	
Sodium hydroxide	7.5	
Isopropyl myristate	10	
Diethylene glycol monostearate		10
Propylene glycol		20
Polyethylene glycol 400 distearate		25
Water	132.5	345
	1000	1000

Foaming agents, however, are also employed with several other cosmetic products, e.g. in bubble baths, and in smaller quantities as stabilizers for dispersing systems and as wetting agents.

Liquid Bubble Bath Extracts

Triethanolamine lauryl sulfate	30	40	30

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Alkyl aryl sulfonate	20		
Proteinic condensate of fatty acids	20	20	10
Sodium alginate solution, 2 per cent	30		
Sodium tauroglycolate		0.5	
Water		39.5	30
	100	100	100

* Active detergents are also employed as emulsifiers in ointment excipients.

O/W Excipient, USP XIII

Stearyl alcohol	250
White petrolatum	250
Glycerin	120
Sodium lauryl sulfate	10
Water	370
	1000

Hormone Cream Excipients

Cetyl stearyl alcohol	270	216
Sodium lauryl sulfate	30	24
White petrolatum	700	560
Water		200
	1000	1000

Acid Creams

Cetyl alcohol	150
Spermaceti	50
Sodium lauryl sulfonate	20
Glycerin	50
Lactic acid, 85 per cent	12
Water	718
	1000

Hand Lotion for Aerosols

Polyethylene glycol 400 distearate	20
Isopropyl palmitate	40
Sodium lauryl sulfate paste	200
Glycerin	100
Water	640
	1000

As wetting agent in cleaning lotions for impregnating cellulose facial tissues

Triethanolamine lauryl sulfate	20
Alcohol, 95 volume per cent	205
Glycerin	100
Menthol	1
Camphor	1
Water	673
	1000

(*Continued on page 236*)

Tablet Disintegration

The purpose of this investigation is to compare starch and cellulose as tablet granule disintegrants. Wood cellulose, like starch has lubricating and binding properties and is inexpensive. A comparison is presented, of the disintegrating properties of tablets of slightly soluble and soluble chemicals when dry starch or cellulose in various concentrations is included in the granulation.

Beringer[1] stated that tablets of very soluble substances disintegrated more rapidly when the soluble substance was combined with a sparingly soluble substance. When the tablet is composed of two or more ingredients, other things being equal, "The rapidity of disintegration of the tablet varies directly with the difference in solubility of the ingredients." When two agents of different solubilities are present, the more soluble ingredient is the first attacked by the solvent and a sort of "honeycombing" of the tablet takes place. Then the tablets fall rapidly to pieces.

Hoyle[2] in his test for disintegration of tablets, outlined his method and procedure. The apparatus used in testing the disintegration of tablets was also described. He found that there were variations in the time of disintegration. It appeared that the rate of disintegration is directly proportional to the temperature of the media and the speed of movement in the media. Results seem to confirm the opinion that the use of artificial gastric fluid as a disintegrating media has no definite advantage over water in disintegration tests, when used on the type of tablets obtained from the formulations that were used.

Silver and Clarkson[3] stated that disintegrating agents are added to many tablets to speed up the disintegration of the tablets in the stomach. Probably the most efficient and most widely used are powdered corn or potato starch. The disintegrating agent is usually mixed with the active ingredients and filler, and an additional amount is very often added to the lubricant. Usually 5 per cent powdered starch is sufficient, but in some cases up to 10 per cent or 15 per cent is used. Very often the starch is divided into two portions, the majority being added to the powdered formula itself prior to granulating, the remainder being mixed with the lubricant. Incorporated in this manner the starch serves a double purpose. The portion added to the lubricant breaks down the tablet rapidly into granules. The starch intimately mixed with the active ingredients disintegrates the granules into their original and more soluble form.

Granberg and Benton[4] found that the use of dried bentonite as a disintegrating agent for compressed tablets of thyroid was more desirable than starch.

Sager[5] stated that it is important to know: (a) how much water a disintegrating agent can take up and, (b) how rapidly it can take up this water. Both of these values can be determined easily by the increase in weight of the agent in standard atmosphere. Determinations were outlined for water absorption and water release for the following disintegrating agents: wheat starch, potato starch, corn starch, agar, rice starch, gelatin and pectin. The disintegrating agents must be added to the powder mixture before granulation or this action is diminished. Of the five varieties of starches studied, none shows any great deviation from the others although the water absorption is most rapid in the beginning with corn starch and slowest with rice starch. Agar and gelatin surpassed the values of all five starch varieties. Pectin stood last with thirty-five hours, but after ninety-six hours surpassed all other substances studied. The shrinking curves of the starches and agar followed similar courses. Those of pectin changed rapidly. It is recommended that the disintegrating agent to be used consist of a mixture of corn starch with pectin or corn starch with agar.

Berry and Ridout[6] found that alginic acid can be incorporated within the granules to give faster disintegration. Disintegration time increased with storage. Uncoated tablets should disintegrate in fifteen minutes or less.

Holstius and DeKay[7] observed that on the basis

*Solka Floc, BW200, brand of purified cellulose, Brown Co., Berlin, New Hampshire.

with Cellulose

by Robert J. Bequette and C. Lee Huyck
DEPT. INDUSTRIAL PHARMACY, ST. LOUIS COLLEGE OF PHARMACY AND ALLIED SCIENCES ST. LOUIS 10, MO.

of disintegration of tablets there is no singular effect of the active constituent, binding agent or disintegrating agent in the tablet as the sole criterion in determining disintegration rate. The rate of disintegration for a tablet is probably due to the interaction effects of the three main effects, and a statistical study indicated there is no universal disintegrating agent which provides the same rate of disintegration for all tablets.

Firouzabadian and Huyck[8] tested five recently developed chemicals as disintegrating agents for compressed tablets by adding them to the granulations just before compression. Results were compared with corn starch. It was found that the sodium bicarbonate tablets, representing the soluble medicament, showed a disintegration time below fifty seconds, while the aluminum hydroxide tablets, representing the insoluble medicament, showed a disintegration time of over five hundred seconds. Of the five disintegrating agents tested for tablets, namely corn starch, alginic acid, Methocel, starch-agar mixture and Veegum HV, the alginic acid and Veegum HV compared favorably as disintegrating agents for this particular formula of sodium bicarbonate tablets. With aluminum hydroxide tablets prepared by this formula, corn starch is worthless as a disintegrating agent. The tablets containing the starch-agar mixture and Veegum HV disintegrated in the shortest time.

Experimental

The cellulose* used was white, highly purified, with an approximate average particle size of 35 microns, specific gravity 1.58, apparent density 34 lbs. cu. ft., and bulk 2cc/gram. It is an inert filler and is accepted by the FDA for tablet formulation. The fibrous nature of purified cellulose, when dispersed in a tablet, reduces capping by allowing better escape of air during compression. This fiber action also improves binding. As a "lubricant", purified cellulose functions as a non-abrasive scouring agent. It is particularly effective with heat sensitive or sticky substances.

Two, 5 and 10 per cent concentrations of dry starch and cellulose were added to the filler lactose, and the sparingly soluble medicinal calcium gluconate. Five per cent acacia solution was used as the granulating agent and the mass was forced through a No. 10 screen and air dried. The mass was then forced through a No. 12 screen and compressed. The effect of concentration and the influence of medicinals with soluble and slightly soluble properties were studied,

TABLE I

Average Disintegration Time in Minutes of Lactose Tablets Compressed from Granulations Containing Starch and Cellulose.

	Starch		*Cellulose*	
Per Cent Additive	*Water*	*Simulated Gastric Juice*	*Water*	*Simulated Gastric Juice*
2 per cent	4.5	3.4	6.1	1.9
5 per cent	8.5	6.4	1.6	1.0
10 per cent	12.2	7.5	1.8	1.3

TABLE II

Average Disintegration Time in Minutes of Calcium Gluconate Tablets Compressed from Granulations containing Starch and Cellulose.

	Starch		*Cellulose*	
Per Cent Additive	*Water*	*Simulated Gastric Juice*	*Water*	*Simulated Gastric Juice*
2 per cent	6.2	5.7	2.5	6.2
5 per cent	10.7	5.9	8.0	4.9
10 per cent	12.0	7.2	9.7	6.4

by taking the disintegration time of tablets compressed to the same hardness.

The hardness of the tablets compressed was kept constant at 5 Kg., plus or minus 0.5 Kg., using a Strong-Cobb hardness tester. A Stokes single punch Model F machine was used for compression of all tablets using the same hopper for each batch. The weight of each tablet was 450 mg. and they were compressed with a 7/16" standard concave punch and die.

The U.S.P. method[9] for testing disintegration was followed. To find the effect of gastric fluid on dis-

(Continued on page 238)

Glycerine and Cosmetics

by Joseph Kalish, Ph.D.

Glycerine is so valuable an ingredient in cosmetics and toilet preparations that it can easily be characterized as indispensable. Using the word in its broadest sense, glycerine is a conditioner for toilet preparations in the package, for the film left on the skin and for the skin itself. This it can do through its almost unique combination of properties—hygroscopicity, low volatility, non-crystallinity, viscosity, solvent power, chemical stability, freedom from toxicity orally and topically, pleasant taste and slight neutral odor. These properties confer upon it maximum compatibility with other possible components of cosmetics.

Glycerine, $C_3H_5(OH)_3$, is described by the U.S.P. as a clear, colorless, syrupy liquid with a sweet taste, completely miscible with water and alcohol. It boils at 290° C. and has a vapor pressure of 1.47 mm. of mercury at 130° C. so that it is non-volatile as it is used in toilet preparations and during their manufacture. Furthermore, because of the formation of hydrates, glycerine reduces the vapor pressure of water in which it is dissolved by more than the theoretical amount and has a retarding effect on the evaporation of the water.

An outstanding bulk property of glycerine is its viscosity when concentrated in contrast with the fluid solutions it gives at lower concentrations. Thus, at 100 per cent concentration, at 20° C., its viscosity is 1410 centipoises, decreasing to 523 at 95 per cent, 22.5 at 70 per cent and 6 at 50 per cent. In the presence of other ingredients, as in liquid and semi-solid emulsions, glycerine often has an outstanding effect upon viscosity or body. In combination with gums, particularly some of the newer synthetics, it can form highly viscous mixtures at very low concentrations.

Although pure glycerine freezes at 18° C., few of us have ever seen the solid. The freezing point is strongly depressed in aqueous solutions, a two to one combination of glycerine and water freezing at -46.5° C. At higher and lower concentrations, the viscosity of glycerine and its tendency to supercooling retard crystallization. In pharmaceutical solutions containing high proportions of sugar which tend to crystallize inside the bottle cap and on the neck of the bottle, small proportions of glycerine will retard and in most cases prevent the formation of crystals.

As a solvent, glycerine shares the universality of water and ethyl alcohol; some compounds moreover have greater solubility in glycerine than in either water or alcohol. Solvent power for fatty materials is low, however, so that emulsions containing substantial amounts of glycerine are not unduly thinned.

Pure glycerine is stable to atmospheric oxygen under all ordinary conditions, during storage or use, so that it remains unchanged over long periods of time. Since, at higher temperatures, iron and copper catalysts may promote oxidation, processing in unprotected iron or copper-containing vessels should be avoided. Powerful oxidizing agents, peroxides, permanganates,

COURTESY CHARLES OF THE RITZ

dichromates, will react with glycerine. But the overall chemical and physical properties of glycerine are such that problems of both chemical and physical incompatability are minor.

The sweet, slightly warm taste of glycerine combined with its other characteristics make it a valuable component in tooth pastes; in oral pharmaceuticals it has an over-all smoothing effect on flavor so that it assists in the major problem of covering the unpleasant taste of active ingredients. The odor of glycerine is faint and mild so that it involves no perfuming difficulties.

The humectant powers of glycerine are outstanding and account in large measure for its predominant position in cosmetic formulation. Humectant action tends to stabilize the water content of a mixture by a combination of hygroscopicity, and retardation of evaporation. Glycerine is hygroscopic to a high degree, quickly coming in to equilibrium with humidity in the surrounding atmosphere. For example, after standing in an atmosphere of 60 per cent relative humidity, until no further gain or loss in water takes place glycerine will have a water content of 26 per cent. Comparable figures are 20 per cent of water in glycerine when the relative humidity is 50 per cent, while at 70 per cent relative humidity, glycerine will contain 35 per cent of water, when at equilibrium.

Finally, and of course all-important in cosmetic applications, glycerine is non-toxic orally and on application to the skin. By experiment as well as experience, glycerine is known to be non-toxic for human and animal consumption. In proportions as high as 30 per cent of the total diet, it does not

(Continued on page 239)

ALL PHOTOS COURTESY WHO

In a Danish sanatorium, a nurse talks to a small polio victim. The World Health Organization facilitates exchange of information between researchers studying the polio virus and trains physiotherapists.

WORLD-WIDE Medicine

In an address before the Pharmaceutical Advertising Club (New York) U.S. Senator Hubert H. Humphrey of Minnesota, still a registered pharmacist and a part owner of his family's drug store in Huron, South Dakota, expressed the belief, "That there is need in the world today for a non-public international professional medical group or foundation whose aim would be to lift the burden of disease from the shoulders of mankind through research, study, assistance, and information ecxhange."

Leading up to this suggestion, Senator Humphrey said:

"Millions of suffering people are bound by the oppressive chains of disease. In large sections of the world, malnutrition, illiteracy, and inadequate shelter are still part of the every day life of many millions of our fellow men. Drugs are playing a major role in freeing these people.

"For example, the World Health Organization reports that there are still ten to twelve million lepers in the world. In Nigeria alone, the estimate for 1956 was 195,000. . . In many parts of the world trachoma has been a terrible, disheartening enemy of people. As an American travels, he is deeply affected to see children blinded by this eye disease. . . There are an estimated 300 million annual cases of malaria. There are an estimated 50 million cases of tuberculosis. . .

"A vigorous, peaceful, happy productive world can arise from abundant health and vitality of men and women. . . it can never grow under the existing burden of sickness, malnutrition, and poverty. No amount of diplomacy or armament can bring peace where the bodies and minds of men are sick. . .

"I have seen how Communism thrives on misery. Recently the Soviets moved into the Middle East and the Far East. There on my recent fact-finding mission for the Foreign Relations Committee, I saw poverty and misery provide fertile ground for the very dissatisfactions that so often make Communism acceptable. Faced as we are with a new Soviet approach in those areas where the greatest doubt and misunderstandings as to our way of life exist, we are now, more than ever, challenged to help the starving and disease-ridden people of the world to raise themselves up out of their misery. . .

"One of the leaders in the field is the World Health Organization. WHO is participating in 700 health

projects in 102 countries. It is this invaluable work which is paying off in terms of a lowered mortality rate throughout the world. . .

"The World Health Organization, with a membership of 88 nations, has the responsibility to serve governments in building up the health and vitality of their people. WHO welcomes the interests of private and voluntary agencies who want to help humanity everywhere. . . There are 43 non-governmental organizations with whom WHO maintains official relations. The World Medical Association, the International Pharmaceutical Federation, the International Council of Nurses, and the League of Red Cross Societies are among these.

"WHO is collaborating with 1,800 scientific insti-

In the Western Pacific region, 13,000,000 children have been tuberculin tested and 6,000,000 vaccinated in six years.

tutions in the world, only 40 of which get any funds from WHO at all. Research is being coordinated in more than 50 laboratories in the field of influenza. Another large number is busy on polio research.

"Projects approved by the United Nations Children's Fund, known as UNICEF, bring food, medical care, and other aid to more than 32 million children annually. Impressive as these figures are, they represent only a small proportion of the critical needs of so many children. Keep in mind that UNICEF is a voluntary, cooperative program of self-help. Each country desiring assistance must first request aid and must be able to give satisfactory evidence that it will be able to develop and continue the program on its own initiative after the UNICEF part of the work has been terminated. In addition, each assisted country must agree in advance to contribute in goods or services an amount equal to the UNICEF contribution."

Concerning the non-public international professional medical group or foundation which he proposed, Senator Humphrey said:

This foundation could be composed of representatives of medical and pharmaceutical professions and the pharmaceutical industry from all parts of

A nurse takes a blood sample from an expectant mother at a maternal and child health care centre in Bangkok, Thailand.

the world. As I have tried to indicate, there are many areas of world health where private enterprises are much more effective than governmental units. And we must keep in mind that the more we can do on a private scale, the less a government is required to do.

The aims of such an interprofessional organization can be generally outlined as follows:

First—to bring the great benefits of American advances in chemotherapy to more people everywhere.

Many countries are extremely backward when it comes to new drugs. If all peoples everywhere were

(Continued on page 254)

The WHO team leader of the Malaria Control Demonstration in Lebanon takes a blood sample from the ear of a boy in a small Syrian village near the Lebanon border.

Accidental Returns

I'd like to begin by bringing to your attention a profound but little-known scientific law which I learned quite recently. It's called "Murphy's Law." Murphy's Law, stated quite simply, is this: "If anything can go wrong—it will!" I heard of Murphy's Law from a friend of mine who returned, shaken and worn, from a fishing trip. He was a very sad man. Everything had gone wrong. On the way to the lake, the radiator of his car sprang a leak—water wouldn't stay out. He suffered many other almost disasterous mishaps. Perhaps the most interesting one occurred when he spotted a snake and picked up a piece of wood to kill it. Murphy's Law was working overtime, the piece of wood he picked up turned out to be another snake!

As you well know, Murphy's Law holds true for many things other than fishing trips. Occasionally, though, the thing that goes "wrong" turns out to be the best thing that could have happened. A "lucky" accident. Then Murphy's Law stops working and *serendipity* takes over.

Serendipity, as you may know, is a word which describes the gift of making happy and unexpected discoveries by accident. I have always heard that it was a word coined by Horace Walpole and derived from the title of an old tale, "The Three Princes of Serendip," the story of three young men who, either by accident or sagacity, were always finding valuable things they were not looking for.

As I said, I'm not aware of *all* their discoveries, but as far as I can figure out these young men didn't accomplish anything without putting in a great deal of thought and planning. As you will see, this is also true about almost all incidents of serendipity.

It's really amazing how many of the most important and valuable scientific and industrial discoveries are the result of accident—of serendipity.

In 1925, William Mason, a mechanical engineer, became rich because he dawdled over his lunch. Mason had an idea. He thought he could make a good, inexpensive paper by using fibers made by exploding wood. He was in a factory drying some of these fibers when a friend asked him out to lunch. After turning off the steam valve that regulated the heat, Mason left the factory. He had a long, leisurely lunch followed by a few extra cups of coffee. He returned to the factory and discovered—to his horror—that the valve he *thought* he had shut off was defective—it had been on all the time. The wood fibers weren't merely dried—they were baked! He looked first sadly, then delightedly at the result—a smooth sheet *not* of paper but of a new wood, a very special kind of wood, *grainless* wood. Masonite. He had made an important and highly profitable discovery. But please note he did not throw away his material without taking a *long, close* look at it.

As you know, cleanliness played its most important role in discovery when Archimedes sat down in an overful tub of water. As he watched the water overflow he hit upon one of the fundamental laws of hydrostatics. *Mrs.* Archimedes' reaction has not been recorded.

Another famous, perhaps legendary, accident we're all familiar with—is Newton's being hit on the head by a falling apple. That bump on Newton's head revolutionized physical science.

Now I am the first to admit that these last two accidents do not quite meet the definition of serendipity. For the accident was not the discovery itself. Rather the accident caused a kind of mental chain reaction—stimulated an unconscious reasoning process—which resulted in the discovery.

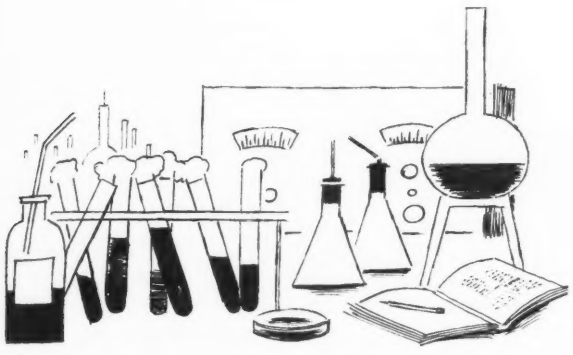
But if we're going to be quite truthful, we'll also have to admit that even pure examples of serendipity do not happen quite by chance. They never seem to happen to everyone. Seemingly they only occur to

*Presented before the Armour Research Foundation Institute.

from Research*

By W. Furness Thompson
VICE-PRESIDENT, RESEARCH AND DEVELOPMENT DIVISION
SMITH, KLINE AND FRENCH LABORATORIES

very special types of people. People who are characterized by certain common denominators:—thorough training; a mind acquisitive for knowledge; and an intense interest either in the problems they supposedly "happened" to solve, or in quite similar problems. For years, Newton had been studying to discover a cause for the orbital motion of the moon and planets. When the apple hit, his mind leaped to the conclusion that gravity not only makes the



apple fall, but also prevents the moon and planets *from* falling. So it wasn't Newton's being hit on the head that was important. It was what was going on inside the head that was hit.

As you may remember, when Archimedes made his discovery he was trying to solve the problem of how to tell if the king's crown was pure gold or if it had been adulterated by base metal. The bathtub incident showed him a method for determining volume. Many another bathtub has overflowed with no more result than a wet floor and a damp dining room ceiling.

Another interesting thing is that the lucky accidents only seem to happen to people with what Pasteur called, "The prepared mind." These very valuable accidents prove—if nothing else—that the outcome of any research attempt is often far from predictable. In fact, unpredictability is part of the essential nature of research. If you don't have unpredictable things, then you don't have research. We tend to forget this when we read our own propaganda. The typical brochures we print to describe our own company's research operations.

You know the kind I mean. Replete with pictures of dedicated, white coated scientists whose eyes are windows to the future. They make research sound as formal and as predictable as an Eighteenth Century dance. Accidents? Luck? No! It's always Science! Exact, painstaking, science.

Would that science *were* all that exact, that research *were* all that predictable. If we are tempted to believe our own propaganda, we'd do well to fight that temptation. That is, if we hope to have our own research people become victims of these profitable happy accidents.

Let's consider for a moment the stories told in our brochures. They all have a kind of Horatio Alger air about them. An idea leaps from the mind of a scientist. The idea becomes a product; the product is marketed; hailed throughout the nation—and makes a million dollars a year for the company.

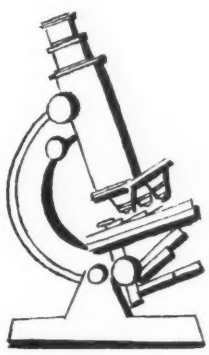
I call this type of thinking, "the million dollar baby fallacy." Thanks to the popular acceptance of this fallacy, many people—including some who should know better—get the idea that research is just one big success story.

Of course, we've all had our million dollar babies—we probably wouldn't be here if we didn't. But these are the exceptions rather than the rule. We hear so much about the exceptions that we begin to think they *are* the rule. Nothing could be further from the truth.

Now most of us aren't naive enough to believe *absolutely* in the million dollar baby fallacy. But honestly though, some of us are naive enough to think that it could be this way—*if*. If *management* could only do certain things, apply certain pressures—or evolve the right magic formula.

Actually I am persuaded that technologically there is really very little management can do which will guarantee success. The other thing management should never lose sight of is that in research—I'm not talking about development or engineering—in research, perhaps more than in most human endeavors,

(Continued on page 256)



Wonder Drugs Tomorrow*

by Thomas J. Winn
VICE PRESIDENT, CHAS. PFIZER & CO., INC.

It is a reflection of how fast times are changing in medicine that the title of this paper should already sound more than a little archaic. It was not long ago, as we customarily think of elapsed time, that the term "wonder drug" was relatively fresh and new. It was coined by some unsung newspaperman to help convey a sense of the miracles being worked by a then novel class of chemicals called sulfa drugs.

How vastly medicine has changed since then! The new era of chemotherapy—encompassing not only the sulfa drugs but more than seventeen useful antibiotics and a host of other effective compounds—has entirely revolutionized the health patterns of the whole world. Today, a list of drugs which that newspaperman would have called "wonder drugs" would fill many pages. Things that once were wonders have become the order of the day; the drugs are as wonderful as they ever were, but the difference is that now we expect them to be.

There will, of course, be wonder drugs tomorrow, and the day after tomorrow, but I strongly suspect that we will not call them wonder drugs any longer. Insofar as anyone can predict the future, it now appears that medicine is moving toward greater and greater specificity in the treatment of disease. We stand just at the beginning of understanding what specific chemical systems go wrong in the body in a specific disease—a kind of knowledge which we did not possess a decade ago, not even in the case of a relatively well-understood disease like diabetes. And once we are in possession of that knowledge, all drugs will be wonderful—because they will all work, every time and all the time.

By the same token, there will be less to talk about, so far as the lay public is concerned, because medicine is becoming steadily more technical—which is another way of saying that it is on the verge of changing from an art into a science. It is easy enough to generate public awe and enthusiasm over a drug like penicillin, at least in terms of the results it achieves—but you will note that the recent discovery of the *mode of action* of penicillin did not create much of a splash in the newspapers; the subject is entirely too technical. Similarly, everybody talks about vitamins, but nobody talks about co-enzyme A; and in the realm of subjects like electrolyte balance there is next to nothing that a layman can grasp. Indeed, I'm none too sure that I understand electrolyte balance myself!

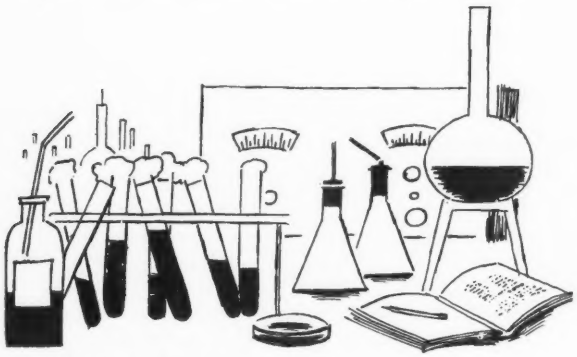
This is natural and inevitable. There is a fundamental unity among all the sciences which insures that their concepts will resemble each other, and in the end will tend to merge. Medicine today is in the process of passing by way of chemistry into the domain of physics—and it is almost a truism to say that the fundamental concepts of physics are almost completely alien to what we think of as our daily life. Indeed, one eminent German mathematician,

*Presented before the College of Pharmacy, University of Connecticut

observing the pages and pages of equations which today make up most discussions of physical problems, has remarked that physics is even getting too hard for the physicists.

You at the University of Connecticut School of Pharmacy have had an ample opportunity—and I dare say a sometimes painful one—to observe these changes. While this years's graduating class was still in high school, the periodic table of the elements was the old, familiar rectangular box with pigeon-holes in it; except for radium and uranium, the elements sat still in the boxes and their relationships were so clear as to be almost cut-and-dried. Isotopes were things that one didn't have to discuss for more than an hour during an entire chemistry course.

Nuclear physics has changed all that. Today the periodic table, as revised by our atomic era, is a disorderly, unsettling maze in which the old stable elements have taken to sliding diagonally from box to box—changing their names with every move—and growing significantly older, if not wiser, with every passing second. It makes just as good sense this way—indeed, it really makes much better sense—but it requires a much subtler brain to comprehend it than



it used to require.

This example of the periodic table is symbolic of what is happening to you as pharmacists. As medicine grows more scientific, so must pharmacy; the pharmacist of tomorrow will have to know a great deal more about the basic sciences than his father did. And a great deal of this knowledge is going to arrive directly through nuclear physics, a field which requires much more precision of mind than was necessary in the era of simple things like "wonder drugs."

The wonder drugs, for instance, allowed us to bypass for a while the complicated problems of natural and acquired immunity to disease. Immunology was once one of our major weapons against illness, however, and we are getting back to it now, thanks to those same radioactive isotopes. If, through tracer chemistry, we can elucidate the nature of the immunity mechanism, we will obviously have made a great advance, one which will in turn help us by suggesting where to look for effective drugs. It seems likely that such a combination of immunology and chemotherapy must be evolved before we can mount a wholly successful attack against the virus diseases.

Now, I do not mean to imply that a victory like the Salk vaccine is not worth winning. Such a use of immunology has already made the United States a country free of another vicious virus disease—smallpox—and mass immunization against polio is now also a possibility. But we can never feel perfectly safe from either of these two diseases, or against yellow fever, or the common cold, until we find a way to attack the virus directly, after the infection has set in. We already know that this can be done with large viruses and Rickettsiae.

Here again, basic research must be done before the problem will see a solution. What we have found about the way viruses invade the cell itself, and the manner in which they take over directing the manufacture of nucleoprotein after they are inside, suggests that we must find an agent which pursues the virus particles right through the cell wall, as well as knocking them out in the bloodstream. This is no small task—but knowing what the task is is half the battle in any science. With the Salk vaccine as a beginning, we may well see polio defeated in the short space of five years.

Similarly, our decade has seen the first really significant breakthrough in the problem of mental disease. Now we have the beginning of a pharmacology of mental disease, with the discovery of the hallucinogenic and the tranquilizing drugs, and the effect on the population of mental hospitals has already been profound; indeed, it is comparable to the wholesale emptying of tuberculosis sanatoria by streptomycin and isoniazid. Tracer chemistry will help us here, too, for at present we know next to nothing about what might be called the chemisty of thought. Such relative newcomers to the scientific scene as electroencephalography and communications theory also are playing important roles, and so is cybernetics. And let me remind you that tracers, cybernetics and communications theory were all unknown before World War II.

Nobody can talk about the future—or indeed about radioisotopes—without mentioning cancer. But cancer is really a part of a much broader, more general problem: the degenerative diseases, including arthritis, the circulatory diseases, and even old age itself. This is the next great field we have to conquer;

(*Continued on page 260*)

Deodorants and Antiperspirants PART 2

by Emil G. Klarmann, Sc.D., D.Sc.(h.c.)
VICE-PRESIDENT AND MANAGER OF TECHNICAL SERV, LEHN & FINK, INC., NEW YORK, N. Y.

Formulation of Antiperspirants

Aluminum salts are used most frequently in the formulation of perspiration-inhibiting preparations. Theoretically, salts of certain other metals could also be employed, were it not for their tendency to causing discoloration of the skin and of fabrics (as e.g., in the case of ferric and chromic salts), or for the risk of percutaneous toxicity (as, e.g., in the case of lead and mercuric salts). As for the anion portion, the sulfate, the chloride, the chlorohydrate (also known as the chlorhydroxide), the sulfamate, the phosphate and the phenolsulfonate are represented most frequently, though the formate, acetate, lactate, acetotartrate, methionate and others are encountered occasionally in actual usage, or in technical and patent references.

A simple and effective liquid antiperspirant is prepared from the following formula:

Aluminum chloride	15.00 per cent
Propylene glycol	5.00
Water	80.00

A cologne type of antiperspirant is composed as follows:

Alcohol	60.0 per cent
Propylene glycol	7.5
Aluminum sulfocarbolate	10.0
Cologne perfume	1.5
Water	21.0

This type of formulation lends itself also for application as an aerosol spray. The recent introduction of glass containers and the replacement of metal components of the spray mechanism by elements made of suitable synthetic plastics, eliminated the corrosion problem which originally interfered with this elegant method of application.

A vanishing type of cream antiperspirant might answer the following formula:

Glyceryl monostearate (acid stable)	20.0 per cent
Glycerol	3.0
Spermaceti	5.0
Sulfonated castor oil	5.0
Aluminum sulfate	25.0
Water	42.0
Perfume and preservative	q.s.

An antiperspirant powder may be compounded from the following formula:

Talc	78.0 per cent
Corn starch	10.0
Sodium aluminum sulfate	2.0
Salicylic acid	5.0
Boric Acid	5.0

As mentioned before, the comparatively high degree of acidity which is generated by the hydrolysis of the aluminum salts poses a problem in formulation. If left unchecked, such acidity might have an irritant effect on the skin either directly or in repeated use, also a destructive effect on certain fabrics of cellulose character, notably those of linen, cotton and viscose rayon; silk, wool, nylon and acetate rayon fabrics appear to be more resistant. Prolonged or repeated contact of the fabric with the strongly acid antiperspirant may cause gradual rotting, maximum damage beign produced at the higher temperatures of ironing to which the fabric may be subjected directly, i.e., without preceding laundering. Thus, if in the course of being worn, a linen garment picks up some improperly formulated antiperspirant from the axilla, and if it is then ironed without having been laundered, the acidity of this residue on the fabric may be activated to such an extent that irreparable damage will result; however, if this acidity is controlled by correct formulation, damage to the garment will be avoided. Considerable light upon the several factors involved in this matter has been thrown by Bien[22] who also suggested a method of obtaining advance information as to the likelihood of any destructive action of antiperspirants on fabrics.

The significance of this problem has been recognized early as evidenced by the fact that the literature, and particularly the patent literature, describes a

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considerable number of presumably successful attempts to overcome this difficulty. The pertinent formulations may be divided into two categories, viz., those which call for the addition of inhibiting or "buffering" agents intended to reduce the high acidity of the hydrolyzing metal salts, and those which specify metal compounds developing a lower degree of acidity, i.e. without the aid of added buffers or inhibitors.

In the former category, an earlier patent granted to Tate[23] provides for the addition of borax to a rather concentrated solution of aluminum chloride and alum. Teller[24] claims that the destructive effect on fabrics of the acidity of the astringent salts may be counteracted by the addition of basic aluminum formate. The following formula supplies an example of the compositions covered by this patent:

Aluminum sulfate	8.0 per cent
Ammonium alum	5.0
Basic aluminum formate (solution)	35.0
Boric acid	3.0
Glyceryl monostearate (acid stable)	20.0
Petrolatum	2.5
Stearic acid	2.5
Water	24.0

Several patents were issued to Montenier. One of them[25] provides for the combination with aluminum chloride of certain inorganic compounds characterized broadly by the formula $R\text{-}CO\text{-}N\langle^{R'}_{R''}$ in which R may be an alkyl, cycloalkyl, aralkyl, aryl and one of the corresponding oxyradicals, while R' and R'' can consist of hydrogen, or alkyl, cycloalkyl, aralkyl or aryl groups. An illustrative example is furnished by the following formula:

Aluminum chloride	15.0 per cent
Acetamide	20.0
Water	65.0

A patent granted to Wallace and Hand,[26] since invalidated, covers the use of aliphatic amides and aliphatic amino-acids having at least one intact reactive amino group, as a means of rendering the

astringent formula harmless to the skin and fabrics. The most important of the "protective" ingredients is carbamide (urea). A simple formula for a liquid antiperspirant within the purview of this patent would be as follows:

Aluminum chloride	15.0 per cent
Urea	5.0
Water	80.0

Of course, the same principle may be (and has been) applied in the formulation of an antiperspirant in cream form.

Insofar as the protection of fabrics at higher temperatures is concerned, it is likely that the capacity of carbamide to form ammonia under these conditions plays a role in the neutralization of acidity which might otherwise become destructive to the fabric.

Klarmann and Gates obtained a patent[27] which covers the employment of certain metal oxides and hydroxides (such as those of magnesium, zinc, aluminum, etc.) to reduce or to eliminate the deteriorating action upon fabrics of the astringent aluminum salts. The principle of this patent is embodied in the following sample formula:

Aluminum chloride	15.0 per cent
Magnesium oxide	2.5
Glyceryl monostearate (acid stable)	15.0
Spermaceti	3.0
Beeswax	2.0
Water	62.5

The reaction products of lactic acid with certain oxazolines (such as 2-octyl-4-hydroxymethyl-4-ethyl oxazoline) are claimed as corrosion inhibitors in yet another patent, issued to H. L. Wampner.[28]

The following are several patents which specify the use of astringent salts of the second category, i.e., those which are claimed not to develop any damaging acidity, and not to require any special inhibitory additives.

The patent granted to Richardson and Russell[29] refers to the use of certain aluminum phosphates, such as the ortho- and the pyrophosphates.

Aluminum chlorohydrate, also known as aluminum chlorhydroxide complex, is the subject of a patent issued to Anderson;[30] this patent has been declared invalid. A satisfactory formula for an antiperspirant cream with aluminum chlorohydrate follows:

Stearic acid	10.0 per cent
Cetyl alcohol	2.0
Polyoxyethylene stearate (Myrj 59)	3.0
Sorbitol (70 per cent)	10.0
Water	55.0
Aluminum chlorohydrate	20.0
Perfume	q.s.

Lately a type of antiperspirant lotion became popular which is applied by means of a roll-on contrivance. The following is a type formula for an emulsion with antiperspirant characteristics derived from its content of aluminum chlorohydrate:

Stearic acid	8.0 per cent
Beeswax	2.0
Polyoxyethylene oxypropylene stearate (Atlas G-2162)	3.5
Polyoxyethylene stearate (Myrj 52)	6.0
Water	58.5
Aluminum chlorohydrate	22.0
Perfume	q.s.

In a patent granted to Grote,[31,32] dichloro aluminum aminoacetate hydrate is described as an innocuous agent suitable for antiperspirant formulation with water or with certain organic solvents. Govett and Almquist[33] describe in their patent a double complex compound, viz., calcium aluminum basic chloride, said to be free from any deleterious action on fabrics.

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Aluminum sulfamate is the subject of two patents granted to Apperson and Richardson.[34] While one patent covers the use of aluminum sulfamate in various antiperspirant formulations (solutions, emulsions, creams, etc.), the other deals with additives employed to prevent fabric discoloration by contact with preparations containing aluminum sulfamate.

Aluminum methionate (aluminum methane disulfonate) is superior to certain other aluminum salts, according to Christian and Jenkins,[18] because of harmlessness to cloth, in spite of a good precipitant action upon proteins.

In the recent past zirconium compounds have come into limited use as the active ingredients of antiper-

(Continued on page 244)

Packaging and Selling

Combination Lipstick Case and Brush
has been designed for Charles of the Ritz by the company's package designer, Ethel Franklin. An inch and a half long, the brush attachment fits snugly over the top of the lipstick container, and the cap fits over the brush attachment. The user can slip the open end of the brush attachment over the index finger to get a firmer grip or can slide it back on the lipstick tube after loading the sable bristles. The case, black and gold, matches the eye shadow stick which the company also has designed. A little over two inches long when closed, the eye shadow stick opens up to a long slender pencil.

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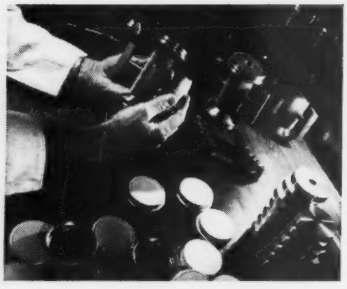

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122 E. 42nd St., New York 17, N. Y.
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COLONIAL APPLICATOR CO.
VINELAND, NEW JERSEY

Women as Cosmetic Customers*

by Florence Goldin
VICE-PRESIDENT, GREY ADVERTISING AGENCY

As you know all durable equipment items are considered purchases and are carefully budgeted for. Toilet Goods items are 'small ticket' or pocket money purchases—impulse purchases!

No one will deny that this is an era of spendable cash for 'pocket money' impulse buying. Yet, despite the fact that 12 per cent of the nation's consumer spending is being used for such impulse purchasing, only 1.3 per cent was spent last year on cosmetics, toiletries and all personal care services while 5.1 per cent was devoted to recreation—2.1 per cent to tobacco and 3.6 per cent for alcohol! Seems we've each had an extra martini somewhere along the line! Toilet goods and cosmetics captured the smallest share of the impulse money by far!

Surely we, selling romance and allure should be able to woo the woman!—Women of all ages, are motivated to impulsive action by the promise of emotional rewards. That's academic!

Today these promises must stem from sound business and marketing knowledge well laced with creative brilliance. At least this is what we at Grey firmly believe. However, the great temptation is to look to past successes for new business ideas. This in effect is putting our efforts back of 'spent horses'. During the past twenty good years, the new products have made the sales increase news. Products born or recreated in the pattern of the changing personality of our times—created with a sensitive understanding of customer's changing lives and needs.

There had to be firsts in these areas—manufacturers far sighted enough to reach out and start us in new directions. The industry owes a great debt of gratitude to these self starters. These were people with daring enough, and vision enough to completely change the personality of hair dyes from a furtive hidden vice, into an accepted glamour cosmetic; deodorants from a secret need, into a socially accepted necessity; eye make up, from the badge of immorality to a sophisticated accessory. From there we could go on to a long list of other business accelerating firsts of the past decade; woman-inspired products like home permanents—sprays and lacquers—diet aids—aerosol packaging—shampoo formulas.

These profit building business ideas weren't born of cold scientific laboratory and market research alone. In most cases the research was instigated by an intuitive awareness and sensitivity to the emotional needs of the new women.

To research findings, sound business guides that they are, there had to be added an extra dimension—the breath of life.

There's an analogy I like to make on this subject—The thermometer, outside your window, will tell you the degree of the temperature—whether it's hot or cold; the barometer may even forecast the weather—clear or stormy; each will do its job reliably. But neither can give you the 'feel' of the day, the sparkle of the sunshine, the blue of the sky, and the fresh breezes that make you want to whistle while you walk. The personality of the day. The extra something in the day that makes you move faster and accomplish more!

Your educated instincts fill in for the emotional poverty of purely mechanical instruments; and make it possible emotionally, for you to feel the day.

The same analogy applies to creating products that will sell to women. Facts, figures and graphs are not enough to guide us, we must capture the essence

BLACK STAR PHOTO

*From a talk delivered at the 22nd annual T.G.A. convention

Sales-increasing . . . specially designed squeeze bottles made of Du Pont ALATHON®

POLYETHYLENE RESIN

Watch the sparkle kindle in the eyes of a child who receives her "very own" set of cosmetics packaged in squeeze bottles made of a Du Pont ALATHON. Packaging cologne, toilet water and hand lotion in squeeze bottles for "little ladies" gives a special sales appeal to the Dutch-Treat Tulip Trio Set distributed by Helene Pessl, Inc., of New Rochelle, N.Y. *(Bottles of an* ALATHON *by Perfection Packaging, Inc., New York, N. Y.)*

Squeeze bottles made of ALATHON 10, 20 or 34 polyethylene resins provide new possibilities in packaging styles and designs . . . new opportunities for more attractive, convenient and efficient packages.

Remarkably resilient and impermeable, bottles of an ALATHON quickly snap back between squeezes . . . seal in essences, aromas and flavors. And ALATHON has outstanding strength . . . never becomes brittle or deteriorates, thus affording lasting protection . . . longer shelf life for products. ALATHON is tasteless, odorless and nontoxic, and can in no way harm contents.

Whether your product is liquid, cream or powder, it will pay you to investigate the advantages of strong, lightweight squeeze bottles made of ALATHON. For more information write to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 258, Du Pont Building, Wilmington 98, Delaware.

There is a difference in polyethylenes . . . specify an ALATHON® for your packaging needs

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

of the new woman's personality and understand the reasons for her longings.

Today's woman is put together pretty much as Eve was. That is, she has the same 'basics'—physically—and probably some of the emotions too! She's still polishing apples to lure Adam—she always will!

But she has changed, she was bound to, along with the changing personality of the times. Whereas Eve arrived as a whole woman in the fullness of maturity—and reached the stage of wife—without competition I might add—today's woman starts taking shape as a money spending customer, at age twelve, four years, earlier than she did ten years ago!

Here's our Teenager. She's either too fat, or too skinny, pimple-faced and sallow, or glowing and fresh. The most enthusiastic trier of new things, you can find. And you have four extra years of this teen age, toilet goods purchasing gold mine. Precious extra years for indoctrination into brand loyalty— for your brand.

She does her own selecting and her own purchasing with her very own pocket money. Plenty of pocket money. Seventeen reports today's eight and one-half million teenagers as having a total of over 4 billion dollars a year to spend on themselves! Seems staggering—but it is so. She earns her money—through baby sitting, and odd jobs after school, and she pads her pocket further with weekly allowances and other parental indulgences!

She spends it all too. When she saves it's for something she wants to buy! According to Seventeen's survey 92 per cent of these girls use hand creams or lotions! And teenagers probably use more shampoo than any other age group. They shampoo their hair at least twice a week, certainly before every date (she tries all sorts of shampoos). There's room for new thinking here. Perhaps this is an area that would benefit by creative dreaming. I've been checking with teenagers. Some of what they dream of as wonderful cosmetic ideas may seem impractical and ridiculous to us. Ridiculous as they may seem, wouldn't it be wise for us to take note of their dreams—they really want them! Perhaps we can fulfill some of them—and if we can, happy as she'll be—we'll be the gainers.

Here are some ideas inspired by a small back fence survey I conducted among teenage friends. I pass them along to you as an indication of their thinking. One fifteen-year-old asks: "What about a perfumed capsule to add to the rinse water for date nite shampoos?" Well why not—we do have perfumed bath capsules now! Another asks what about an electric hand hair dryer as a premium for coupons enclosed with her favorite shampoo—says it would be a great boon for her to use—in luring her mother into paying for the stuff! Another has ideas about a new packaging for shampoos; her very own blend shampoo formula—to be blended by herself!

They would come in separate single shampoo envelopes, to be mixed, one of this with one of that, or vice versa. One combination for times when she wants to wear her hair sleek—another for when she wants to wear her hair 'fluffy', etc. She explained the blending as the way some of the new salad dressings are contrived. She thinks this would make her feel she was using something special—something all her own—an emotion very important at this stage in her life. We could go on with their dream stuff, but I am sure you can do this better for yourselves.

I can't resist the temptation of giving you one more that came up! We all know these girls love lipsticks. They buy every new color they can manage to afford. They think that a sack of sample lipsticks for $1.50—like a sack of small boys' marbles, would be "dreamy"!

But if you think the teenager is a young costomer, now cosmetic consumers start at age two! True there were children's cosmetics plodding stodgily along unnoticed for years; until some enterprising dreamers dared add a new look to old products. Recognizing the emotional response doting parents, aunts, grandmas and friends would have to a cute new children's gift idea—they used a packaging strategy to build a new cosmetic personality, "children's cosmetics," and another mass market cosmetic category was born.

From age five to nineteen 'the youth group' is as yet comparatively unexplored and underexploited by really specialized cosmetic promotions. This group accounts for 26 per cent of the total national purchasing market. Something to think about, isn't it?

Before long our teenage 'Twiggling' reaches the 'Huntress' stage. This is the time when she looks to cosmetics for her most dramatic results. Her emotional problem is twofold. She enters the highly competitive business world, and she wants to attract a mate. She needs every new product that can bring her nearer her goals, and products that promise enchantment, enticement and allure are the ones that can reach her pocketbook.

Her life goes on at an accelerated pace. What she looks for in her cosmetics is speed of use, convenience, true and honest results, and a lasting effect. A lasting effect, is probably her most important stipulation. When powder base promises to make her skin look wonderful and glowing, she wants to be sure that the glow will last from breakfast-time to lunch-time when she can refresh her makeup.

She expects good performance of her cosmetics and is a relentless changer of brand loyalty until she's satisfied that a product will keep its promises but once she finds the product that comes closest to the performance she expects and wants of it she'll stay with it . . . until the next smart competitor gives her more! They have dream ideas about cosmetics. Here are two my secretary brought back from a survey

(Continued on page 263)

Give your product a better break

with

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AEROSOL VALVES

Functionally as well as esthetically, OEL Aerosol Valves are highly qualified to increase customer goodwill for the products they dispense. This happy result is attained by ingenious design, efficient manufacturing, and careful final inspection. Consider these important points:

Equally effective in cold or pressure filling • Fast loading • Minimum propellent loss in pressure filling • Safe with inflammable materials • Esthetic appearance • Adapts to wider range of dispensing requirements with minimum change.

Your product will attain maximum success in containers featuring all-purpose OEL Aerosol Valves.

WRITE OR TELEPHONE FOR COMPLETE INFORMATION AND SAMPLES.

OEL THE *BETTER* AEROSOL VALVE

OIL EQUIPMENT LABORATORIES, INC.

600 PEARL STREET
ELIZABETH, NEW JERSEY

Packaging and Selling

Expanding Cosmetics

There are two financial statements which make very interesting reading for members of this industry. This is because these statements point out that the cosmetic industry is no longer an industry of a great many small companies with no one company having any significant share of the industry's business.

It is very evident from reading the statements of the first six month's business of Revlon and Avon that they will each pass the mark this year of a $100,000,000 annual business.

If it is considered that these two companies operate almost exclusively within the field of taxable cosmetics, then this means that these two companies are doing $200,000,000 in retail sales out of an industry total of something less than $600,000,000.

It is a fact that a veritable revolution in industry readjustments has been taking place over the last five years. During this period, the two enormous influences which entered this industry are television and the opening to cosmetic distribution of an additional 20,000 stores with the challenging problem of self-service.

Just to briefly review some of the cosmetic companies which have been undergoing what might be called an evolutionary process, here is a vivid picture of what is happening in this industry.

It is true that there is nothing radically new with Avon. This company is simply progressing at an expansion rate of 15 per cent to 20 per cent a year with the greatest steam roller movement that this industry has ever seen here or in any other country. Avon is still the industry's largest cosmetic company and from the viewpoint of its steady progressive growth, by far the soundest and most secure operation among the big-time cosmetic companies.

It is interesting to observe that Avon, a company depending exclusively upon personal selling, has made its greatest growth during a period of industry excitement in self-service. It is also interesting to note that although Avon uses some TV spots, it still has a moderate, conservative advertising budget from the viewpoint of other big companies. Avon has made its great growth in the face of the greatest concentration of competitive gimmicks and hysterical pitch in advertising that the industry has ever seen.

Revlon, the hero of this particular hour, could almost be called a television program as well as a cosmetic company. Revlon's sudden, emotional, fantastic success reminds us of the one time statement of an advertising expert who said, "When you are in the cosmetic business, you are in the advertising business." Revlon last year passed the $85,000,000,000 mark and should, this year, at its current rate of growth, pass the $100,000,000,000 mark. To accomplish this $14,000,000 is being spent in advertising.

At one time a company with a limited number of carefully selected, highly publicized products, Revlon has been expanding into just about every cosmetic product known to the cosmetic laboratory. It has tentatively entered the proprietary medicine field and is currently looking for an opening in the ethical pharmaceutical field.

At the same time that Revlon is maintaining trained demonstrators in department stores and excelling in every known and devious method used to secure department store domination, some of its products are wholesaled, some in mass distribution, some are carried to the grocery stores by the rack jobbers and some are sold throughout the beauty trade and are being used to open retail departments in beauty parlors.

Nobody knows how much of Revlon's growth is coming from new products and expanding distribution. Nobody knows how long Revlon can straddle every field of specialized incompatible distribution and how long they can maintain in the public mind a fashion leadership while at the same time selling utility products in the grocery store.

Hazel Bishop is an excellent example of a cosmetic company that became more of a television program than it was a cosmetic company and also of a cosmetic company that expanded rapidly and dramatically by opening during a period of a few years, from zero to somewhere around 150,000 retail stores. Hazel Bishop won its position and is trying to maintain a position by spending for advertising what is estimated to be fully 50 per cent of sales.

This company reported losses in 1955 and 1956 but still believes that the dominant note in cosmetics success today is the multimillion dollar advertising campaign to pull them back among the leaders.

Lehn & Finke with Dorothy Gray and Tussy, were early cosmetic pioneers in television. Two experiments in the million dollar class in TV shocked management into a realization, that television, at least as far as cosmetics go, was not always the sure road to success. However, Dorothy Gray and Tussy have been investing substantially more than a million dollars in

magazines and newspapers in order to hold their position in this no-hold-barred advertising fight now taking place in the cosmetic business.

Both Dorothy Gray and Tussy have been experimenting with the extreme limits of selected distribution. Nobody knows how far they have gone down the line and past the border line that separates selected distribution from mass distribution. These two companies provide an excellent example of a prominent problem now facing many people in the cosmetic industry. That problem is how can I develop sufficient sales which will enable me to spend in advertising one or more million dollars a year and yet still maintain the pretense and the apparent physical structure of selected distribution so that in turn I will be able to maintain my position and some degree of cooperation from the stores that really do the cosmetic volume and that really know how to sell cosmetics, that is the department store and the class drug store.

Nobody knows how Max Factor's business is divided between domestic business and foreign business. Their financial report shows that they do more than $35,000,000 a year. Their position in the domestic industry and in domestic distribution, however, is rather difficult to define.

There are quite a few other companies in the galaxy of the million dollar advertising category which in turn, and almost of necessity, means a drive for the mass market, a departure from the historic predominance of fashion in cosmetics and a movement toward making cosmetics into products which are simply utilities. Among these companies are Lanolin-Plus, Helene Curtis, with their boisterous growth, Helaine Saeger, Park & Tilford, some of divisions of Warner-Lambert, notably Dubarry, and Helena Rubinstein.

It is fair to conclude from the clamour and the shouting on the air and in the mass consumer magazines, that a great many changes are taking place in the cosmetic industry. A pessimist might say that magazine and newspaper surveys show little or no gain to the industry in increasing consumption of mass cosmetic products from this fantastic clamor of the last five years. A pessimist might also say that many of the things that are happening in the cosmetic business have been the brief and merry cycle of previous years.

In spite of all these critical remarks there are fundamental changes which have arrived in this industry and there can be little question but that broader distribution and self-service will create a class of utility cosmetics, as opposed to fashion cosmetics, and there is also very little doubt that perhaps a better and a more ethical and a more sincere and a more honest television program will show that personal selling via TV will be a real worth while plus to the industry.

On the Rocks

Strange things happen during the summer heat and even stranger are some of the cooperative promotion deals that are taking place between this industry and other industries.

In Gimbel's, Milwaukee, Helena Rubinstein, Cosmetician, and the Campbell Soup Company, Souptician, have joined forces in a promotion with the theme "Beauty on the Rocks."

We are familiar from previous promotions why Campbell calls this particular invention "Soup on the Rocks," but it has been a little too warm for us to strain our imagination to visualize the effect of the theme "Beauty on the Rocks" for inspiring anything positive for consumers. At any rate, at a double barrel point of sale activity the Rubinstein specialist, in talking over complexions with the customer, urged the customer to have Soup on the Rocks and apparently the Soup on the Rocks demonstrator urged the customer to have some beauty care.

You figure it out.

U. S. I. News

Readers of this magazine during any part of the last twenty-five years, have been thoroughly familiar with the advertisement known as U.S.I. Chemical News. This advertisement has appeared with only minor changes in layout on the same blue sheet and in the same format since June 1932.

This unusual departure in advertising has featured editorial information about U.S.I. new products, processes and other activities of the company, but it has also covered the news of products manufactured by other companies.

On several occasions readership surveys have shown a consistent top in readership for these advertisements.

The April issue of the U.S.I. Chemical News was selected as an outstanding example of current top-notch advertising for inclusion in the cornerstone of the $7-million New York School of Printing building.

Super-Selling

Here are five essential elements for a health and beauty product to win a solid position in the supermarket. These five elements were recently suggested at the McCall's health and beauty panel for supermarkets by non-foods manager Dale Petersen of Certifitd Grocers of California.

1. Demand—the product must be pre-sold through

glass containers move more drug products

Use Anchorglass® *containers sealed with* Anchor® *caps*

...because they are more convenient

CONSUMERS prefer and buy drug products in glass packages because they are easy, quick and safe to open, easy to use, easy to reseal repeatedly. And they show how much is left in the package. Sealed with dependable closures, volatile products cannot evaporate ...dry products are shielded from moisture absorption, retain their full potency. The purity, strength and all the other qualities which characterize your products are thus protected. Pack and move more of your products in quality controlled Anchorglass® packages.

ANCHOR HOCKING

GLASS CORPORATION

Lancaster, Ohio

advertising or sampling to create consumer demand.

2. Value—In order to attract new customers, there must be some special value.
3. Appeal—promotions must appeal to as great a segment of customers as possible. As an example, Petersen suggested that a promotion of a hair care product for red heads would have less appeal than one for all colors of hair.
4. Incentive—in order to attract operators, the promotion should offer extra profits, possibly in promotion or advertising allowances.
5. Display tools—designed to fulfill the needs of supermarkets rather than drug outlets.

Petersen conceded that all five elements were seldom found in any one promotion, but expressed the hope that such comprehensive benefits could be built into future supermarket health and beauty promotions.

Hair Survey

The tenth John H. Breck, Inc. beauty shop survey has just been received. This is a thoroughly complete and authentic survey which each year commands increasing interest in the industry.

Here are some of the findings:

(1) Beauty shop traffic continues high.

(2) There has been a small increase in the number of visits per patron.

(3) A decline in the number using home permanents.

(4) Growth in the number of users of hair coloring treatments.

This survey shows that worry over hair problems is almost universal among women. Eighty-two per cent of the women had hair problems. Manageability of the hair, dryness and dandruff are the major problems, followed by lack of lustre, hair falling out when washing or combing and oiliness.

These worries indicated to us that there is still plenty of room for research in this industry.

Research Cost

Sales and advertising executives have become very obviously aware of the importance of company research to their specific department. Many of these men have discovered it is company research, whether a new product or product improvement, or packaging or some other form, that has given initiative, energy and momentum to their own department in sales and advertising.

For this reason a recent study by the American Institute of Management to find the "practical" minimum research budget of a small business is of more than passing interest to these marketing executives.

The small business that wants to establish a research department of its own should spend $120,000 a year. This research budget should include a research team of perhaps five scientists and five other personnel, plus an initial $50,000 for capital outlay.

Although research could be carried on by a single scientist, a formal department usually works out to the above minimum.

According to one research consultant, "If a company cannot spend at least $100,000 a year for five years, it cannot afford its own research department."

Only 10 per cent of the country's small manufacturers have their own research facilities and only about 20 per cent support research in any way at all.

Many small companies are solving this problem by working through outside research foundations and consulting research laboratories.

We might add, out of many years of observation, that one of the primary considerations in establishing connections with suppliers should be found in an answer to the question, "Has this supplier vigorous, creative research in his own field and is he in a position and willing to help me so far as his own field is concerned?"

We have seen many miracles of success in business where the idea, the formula or the complete program was handed to the manufacturer on a silver platter by the supplier — and it was not always to a little company.

Growing Private Label

There is little doubt but that retailers are progressively turning to an examination of the possible advantages of bringing out their own private brand merchandise. We form this opinion from a reading of a variety of retail journals in different fields and from a reading of a number of speeches at recent retail conventions.

This interest in the retail private brand seems to be generating in almost every retail trade where nationally advertised packaged brands are sold over the counter.

It would be interesting to know just why this interest in retail private label should pop up in so many places and in so many different trades during these last few months. There has been some feeling that certain prices resulting from an extravagant manufacturer's markup, in order to pave the way for million dollar campaigns, have offered the retailer a very wide and tempting operating margin. There is also some discussion that the overwhelming flood of large national advertising campaigns combined with the tactics of many manufacturers in regard to the retailer have made many leading retailers fear that they were losing their store identity and becoming merely automatic machines to be pushed around at a manufacturer's will.

At any rate, one leading retailer, that is the General Manager of Carson, Pirie, Scott & Co. at a recent forum in Chicago stated that their experience proved that "the consumer is as willing to accept a brand recommended by a local reputable merchant as he is the advertised label." This executive then said that the house brand must have quality and the right price for their particular clientele or they would surely lose business in their community.

At the recent annual meeting Woolworth's chairman stated that Woolworth "is meeting gratifying public acceptance of its private label merchandise." It is a question, he stated, basically of the selling power of nationally branded merchandise versus more freedom to retailers in setting price tags when using items with their own brand.

We commented here recently how A&P are step-

A world of beauty is a man's right, too

The tremendous market for masculine lotions and toiletries makes male-styled containers a must. In crystal-clear flint and beautiful opal, Hazel-Atlas *Private Mold* Cosmetic Containers are imagination in glass — and practical, too. At domestic prices, they add the glamorous prestige of more expensive imports to your cosmetics. And to save you time and expense, distinctive H-A "Deco-fired" Labels and designs can be economically applied in one or several permanent colors at the time of manufacture.

Rigid quality-controls keep your H-A containers uniform in size, shape, clarity and color. They perform efficiently on the filling line and display your product at its best. You are sure of fast, dependable delivery during sales peaks and emergencies, served by H-A's nationwide network of glass plants and warehouses. A beautiful line of stock containers is also available. Call your nearest H-A representative today.

...glamour in glass

HAZEL-ATLAS GLASS division of CONTINENTAL CAN COMPANY

WHEELING, WEST VIRGINIA

why RISDON aerosol VALVES STAR

in so many cosmetic and pharmaceutical successes

It's a combination of talent and beauty that makes the Risdon valve line the top performer in successful cosmetic and pharmaceutical packaging.

These valves have a wide range of ability to enhance both the performance and appearance of glass, plastic and metal containers. In the line, you'll find special mechanical features such as non-metallic construction, instant on-off action without springs, the patented "Micro-Mist" actuator as well as actuators for horizontal and vertical sprays or foam dispensing.

Risdon offers the most complete line of valves for dispensing the widest variety of formulations. Applications include conventional aerosols, 3-phase products, alcohol base products, foam products, powder sprays, metered sprays, ultra-low pressure sprays and products containing propellant emulsions or dispersions.

A wide variety of standard or custom actuator designs as well as plastic or metal protective overcaps are also supplied by Risdon.

Write for free booklets on Risdon valves for your product.

THE RISDON MANUFACTURING COMPANY

RISDON

Valve Division • Naugatuck, Conn.

ping up their private label merchandise and have entered this trade with a toothpaste and we have noted an investigation into other departments of private label by a considerable number of major food chains.

Before the Second World War, as many business men today will remember, the retail private label had grown to a very substantial problem. It was a very definite problem in a number of leading department stores. During the war and for a period thereafter most of this private label business died out because of the shortage of materials and other wartime and post-war difficulties.

In the last few years, however, many manufacturers have substantially increased their price structure to provide a substantially larger advertising and promotion margin. In some commodities this markup has become extravagant, as the growth of the discount house amply makes clear. Now, in addition to the discount house, as partial result of these extravagant markups we may see a flooding epidemic of new retail private labels.

Packaging Series

We have recently had submitted to us for review the following pamphlets published by the American Management Association of 330 West 42nd Street, New York 18, N. Y.

"Consumer Packaging—Its Technique and Psychology" — 75c
"Planning Package Development" — 75c
"A Primer On Basic Types of Shipping Containers and Interior Packing Pieces" — 75c
"Cost Controls for Packing, Shipping and Warehousing" — 75c
"Fitting the Shipping Container to the Product" — 50c
"Packaging Standards, Materials, and Equipment" — 75c
"Coordination Between Engineering, Production and Sales" — 50c
"Specifications for Package Materials and Design" — 75c
"Better Export Packaging—Improved Loading" — 50c
"Increasing Package Effectiveness at the Retail Level" — 50c
"How General Electric Tackles Its Packaging, Packing and Shipping Problems" — $1.25
"Protecting the Package in Transit" — 50c
"New Uses for Plastics in Packaging" — 50c

Quote on Advertising

Here's a quote from a recent speech by P. B. Morehouse, Assistant General Counsel for Compliance of the FTC, at the Cosmetic Career Women's Luncheon.

"Misleading advertising and 'double talk' can be sheer economic waste, as well as dangerous in the light of increasing consumer intelligence and inquisitiveness. Where the advertising is false or misleading, the F.T.C. can move in, but advertising can harm itself without provoking F.T.C. action. For example, copy literally true and non-deceptive, but stated in such a way that one suspects a deliberate intent to mislead, can get very annoying and generate apathy, if not downright hostility to the product."

Some of The People Some of The Time

According to the vice president of a leading Chicago department store, the key to profitable merchandising is "in creating an atmosphere in which the customer feels that he is getting a 'good buy'."

This leading store has recently opened up a "Warehouse Store" in the Chicago area. In this new warehouse store is stocked 25 per cent discontinued merchandise and 75 per cent new items. The new items are "not necessarily lower priced" than the same merchandise which this store displays in its expensive overhead on State Street.

This executive further declared, "Because of this warehouse store type of operation, it is my opinion that people feel as if they are purchasing merchandise at a very advantageous price though it may be the same piece of merchandise which we are selling at the parent store at the same price."

It occurs to us that Abraham Lincoln once made a remark about what you can do to some of the people some of the time which was very pertinent to the situation which this leading retail executive describes.

Air Delivery

Probably the first systematic coordinated handling using the airplane and the motor truck for retail deliveries have been developed by the Slick Airways of Texas. This new service known as "Surf-Air," will reach 5,000 communities across the nation. This is a regularly scheduled service to cover a wide area with fast retail delivery.

The Cost and The Package

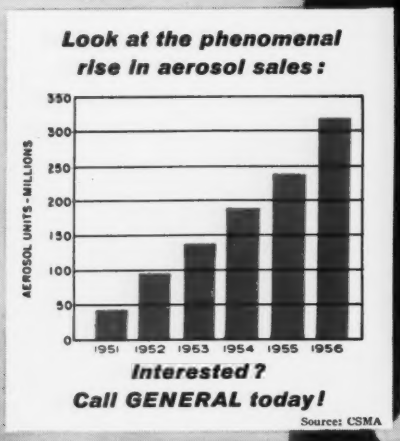
Something that is very often lost sight of in packaging was pointed out by Arthur C. Nielson, Jr. in a recent talk.

Mr. Nielsen suggested that package designers must never forget that price is the most important single factor in most sales. "Since packaging represents a large cost, efforts must always be made to specify precisely those materials which will protect the contents and still give adequate sales appeal."

"The package should afford no higher degree of protection than necessary nor seek to achieve sales appeal at an unwarranted cost in relation to competing items. If too much money is spent on packaging, the higher cost and selling price of the product may hurt its sales potential."

While we agree thoroughly with these statements, we are compelled to admit that in our industry there are countless package products that deny the truth of this statement. We do not mean by this, for instance, perfume packaging where there is a very illusive factor in pricing. We are thinking primarily of such products as the Remington electric razor where every purchaser of this utility product is treated from a packaging viewpoint as if he were making himself a Christmas present and compelled to pay between $2.00 and $3.00 for the package alone.

AEROSOL


Look at the phenomenal rise in aerosol sales:
AEROSOL UNITS - MILLIONS
350
300
250
200
150
100
50
0
1951
1952
1953
1954
1955
1956
Interested?
Call GENERAL today!
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PACKAGING

can start sales shooting straight up *for you!*

Had your eye on aerosols? Then you've seen sales shoot from 40 million units in 1951 to 320 million units in 1956. Aerosol sales have shown a steady increase of about 30% every year since '51!

Here's how *you* can get into this dynamic, high-profit field practically overnight—*without* heavy capital investment!

If your product can be sprayed, brushed on, dusted or daubed, it's a likely candidate for aerosol packaging. General Chemical will help you develop a formulation with the right pressures and compatibilities for your product and container. *No cost or obligation!* And there are many capable contract fillers throughout the country who will put up your product in aerosol form for test marketing, and handle commercial production afterwards. You do not have to invest in plant, special equipment or personnel to get into aerosols!

To arrange for a special presentation, write or call "Genetron" Department, General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y.

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The Right Propellant for Every Aerosol Need!

Call on General for:

Free fact-packed technical manuals, market information

A complete aerosol research and development laboratory

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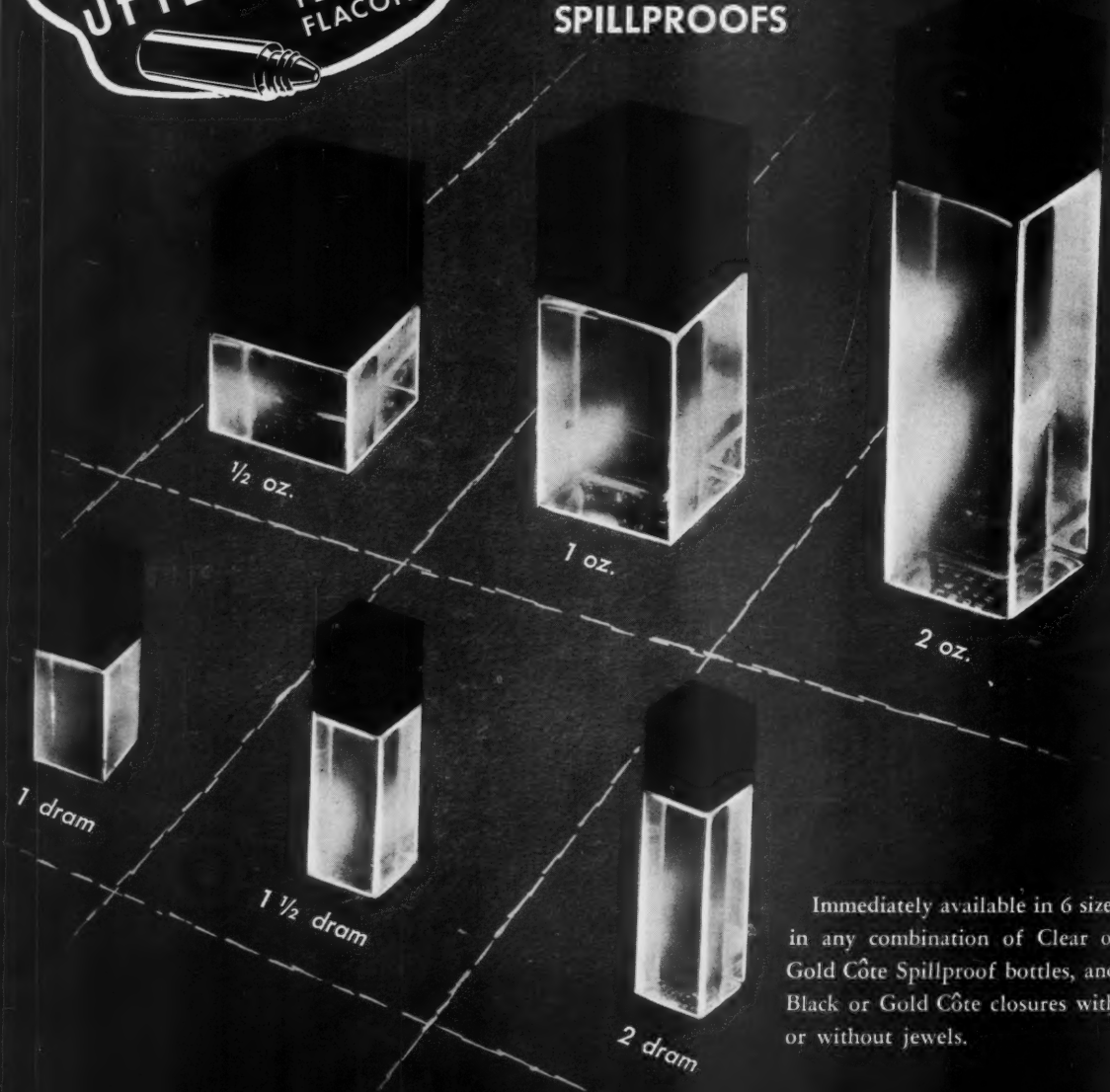
RICHFORD SPILLPROOF PERFUME FLACONS

. . . . . have done their part
Now let your Imagination
Run Wild with these
NEW SQUARE
SPILLPROOFS



Immediately available in 6 sizes in any combination of Clear or Gold Côte Spillproof bottles, and Black or Gold Côte closures with or without jewels.

The smartest lines in 1957
will feature these sensational flacons.

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News in Packaging . . .

Design Features of Packages For Self-Service Selling

Design features stressed in new folding cartons geared to self-service selling have been listed by A. E. Murphy, marketing director of the Folding Paper Box Association:

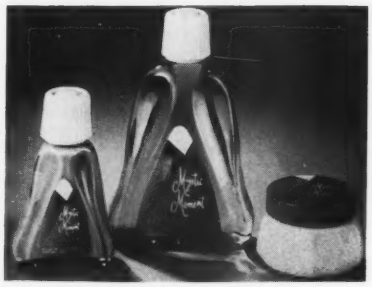
1. More illustrations—especially for products designed to appeal to children;
2. Greater use of multi-packs to capture added display area—raise potential unit sales;
3. Vertical construction of cartons to conserve sales space—facilitate display arrangements;
4. More window cartons to permit greater visibility while retaining protective advantages of packaging;
5. Simpler design with increased stress on trade-marks and brand names to fortify product identification;
6. A definite trend to family design for lines of products offered by one manufacturer;
7. More packages are using handles to expedite carrying and "take-withs."

Aerosol Design Competition

"Best of the Year" applications for entry in 1957 Aerosol Package Competition Awards are being mailed to brand owners or marketers wishing to submit their new push-button products for judging, it has been announced by the Aerosol Awards Committee, Chemical Specialties Manufacturers' Association.

A copy of the Aerosol Contest Bulletin can be secured by non-members upon written request to the Secretary, CSMA, 50 East 41st Street, New York 17. All entries will close October 15.

An applicator-tip tube is being used for "Bliss," Richard Hudnut's new home permanent, which is applied directly to the hair before winding. The tube is packaged in a gold box, accented with black, and sprinkled with pink and white confetti dots.



Glass containers now being used for the "Mystic Moment" cosmetic line distributed by the Fuller Brush Company are made by the Hazel-Atlas Glass Division of Continental Can Company. Cap for the two bottles is by Armstrong Cork Company.

Packaging Speaker at International Sales and Marketing Congress

"The Package—The World's Best Salesman" is the title of a talk to be delivered by Frank Gianninoto, industrial designer, when he addresses an international sales and marketing congress to be held September 8 to 11 in Copenhagen. The congress is being organized by the Association of Danish Sales and Marketing Executives in cooperation with the International Division of the National Sales Executives, Inc.

THEODORE A. THONET

Joins Continental Filling

Theodore A. Thonet has been appointed to the laboratory research staff of Continental Filling Corporation and will be engaged in aerosol research under the direction of William Walker. Mr. Thonet has had extensive experience in analytical and physical chemistry.

Revlon Packaging Manager

Seymour Wassyng has been appointed manager of packaging for Revlon, Inc.

Study Shows Top Management See Packaging as Decisive

"Higher echelons are becoming increasingly conscious of the influence packaging can exert on their business," according to Gustav L. Nordstrom, executive director of the Folding Paper Box Association. "As a result, packaging has achieved the stature of being represented by a full-fledged member of product planning committees in many prominent corporations."

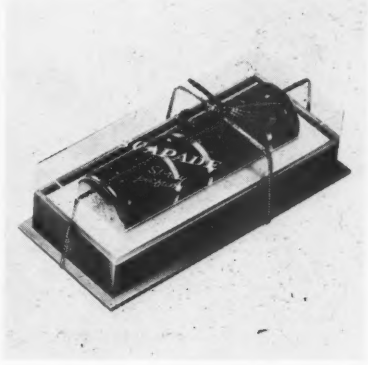
Citing a recent study conducted by his association of 307 food and grocery firms, he reported that 44 per cent of the companies queried have adopted a relatively new development: the packaging committee. In 63 per cent of the companies, the general sales manager or sales vice president is a member of such a committee, and in 53.2 per cent of the cases the president is also a committee member. "Actually the president is chairman of the packaging committee in 38.5 per cent of the companies questioned," Mr. Nordstrom said.

"One factor sparking management's new interest in packaging is its role as an advertising medium. Policy makers have found that packaging can make four specific contributions to a company's promotional program: create new sales themes; break new paths for sales promotion; open new outlets for added volume; close the sale at the point of purchase."

Personalized Display

Norwich Pharmacal Co. salesmen are provided with Polaroid Land cameras to snap the druggist's picture for inclusion in the new Pepto-Bismol counter display. Within two minutes, the druggist can have a display "tailored" for his own store.

Shulton, Inc. has created a new package for its Escapade Spray Perfume. The black, multi-colored cylinder is now in a pink box with white platform, covered by clear plastic and tied with a gold cord.



HERE'S OUR NUMBER 369, the perennial favorite of those who package in glass. Universal in appeal, versatile in application, this handsome bottle has proved its merit time after time.

Use it for cologne, toilet water, lotion, after-shave or what you will . . . you just can't find a more suitable container. Made in ½, 1, 2, 3, 4, 6 and 8 ounce sizes and labeled or decorated to your specifications.

GLASS STIMULATES SALES

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

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Patent thoughts and trends

by Thomas Cifelli, Jr., PATENT ATTORNEY*

Items singled out for discussion this time around include a new antibiotic, Nystatin, which has fungicidal but not antibacterial properties; a court decision holding invalid product claims to vitamin B-12 concentrate; and another court decision which held that it was unfair competition for one manufacturer to aid a druggist in substituting another manufacturer's cheaper product in filling prescriptions by giving the druggist a card showing corresponding products of the manufacturer in question and the competitor.

Nystatin

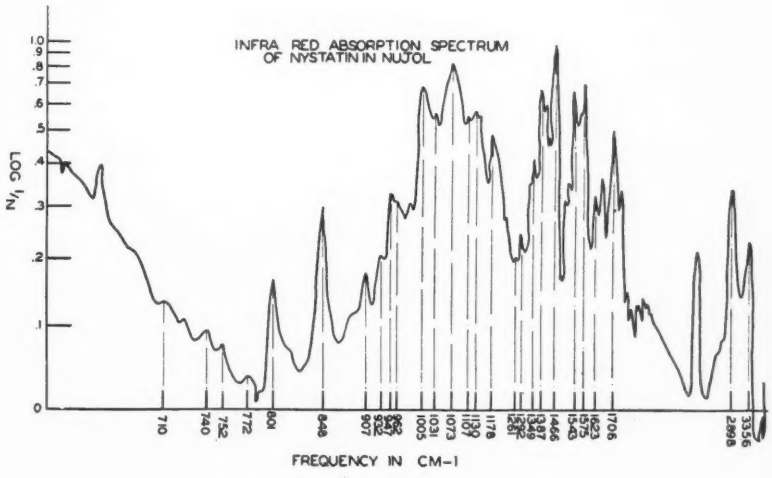
It may or may not be significant that two lady inventors, Elizabeth L. Hazen and Rachel F. Brown, have come up with a new antibiotic which seems to have properties just the reverse of those possessed by most antibiotics. Their new antibiotic is antifungal but apparently lacks antibacterial activity, unlike the situation with antibiotics generally, which are characterized by high antibacterial activity with little or no antifungal activity. The new antibiotic is covered by U.S. Pat. 2797183, issued to Research Corporation.

The organism which led to the new antobiotic belongs to a species under the genus Streptomyces, the particular strain having been isolated from a farm soil in Fauquier county Virginia, and named "Streptomyces Noursei," after the owner of the farm.

Nystatin is obtainable by the following general procedure: the organism Streptomyces noursei is grown in contact with (i.e., in or on) a sterile liquid nutrient medium containing a source of assimilable carbon and nitrogen, and the nystatin formed is recovered, preferably from the mycelium (i.e. organism growth). In the preferred method, the mycelium is first separated from the culture liquid; the separated mycelium is extracted with an organic solvent for nystatin, especially a lower aliphatic alcohol; and the solution of nystatin thus obtained is treated to further purify and concentrate the nystatin therein. Alternatively, the mycelium may be extracted while in the culture liquid, in which case the organic solvent for nystatin employed must be substantially water-insoluble.

The organism Streptomyces noursei is characterized by straight, curved and wavy mycelium, and by round and oval spores produced in chains from curved and spiral-forming hyphae (loose, closed spirals). When grown on Sabouraud's glucose agar at 28—1° C. for seven days, the colony is heaped and folded; the aerial mycelium is at first white, then later (at sporulation) gray; and on the under surface, the color is at first light tan, and after two weeks it is usually dark brown and the medium is darkened throughout. There is no hemolysis on blood agar medium, but the medium is darkened.

An infra-red absorption spectrum of the new antibiotic is given below:



According to the patent it was definitely established that mice injected with large amounts of C. neoformans or H. capsulatum and given repeated parenteral doses of Nystatin have a milder form of infection, and that life prolonged beyond that of the control.

Vitamin B-12-Active Concentrate Held Product of Nature

A West Virginia federal court has held U.S. Pat. 2703302 invalid insofar as the product claims are concerned. This decision was handed down in a suit involving Merck against Olin Mathieson. The judge indeed nailed the lid down a little harder by also stating that he found lack of invention.

The subject matter of the patent is stated as follows:

"This invention is concerned generally with the production of valuable vitamin products by fermentation. More particularly, it relates to vitamin B_{12} active concentrates which possess animal protein factor (APF) activity, and which can be characterized by their property of promoting the growth of the microorganism Lactobacillus lactis Dorner (LLD), and to methods for producing such vitamin B_{12}-active, APF-active and LLD-active material utilizing selected strains of microorganisms belonging to the subphylum Fungi. These vitamin B_{12}-active concentrates are valuable

*Richards and Cifelli, Newark, New Jersey.

NEW PERFECTION
DROPPING PARTS
meet EVERY
"Satisfaction Test"

QUALITY	A-1
UNIFORMITY	A-1
PERFORMANCE	A-1
CLEANLINESS	A-1
SERVICE	A-1

#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap: AMEKINE oil-resisting synthetic rubber bulb; blunt glass.

They're A-1 with your customers, too . . . assuring you repeat sales!

When you sell a product that pleases and satisfies your customers, you're assuring yourself of their goodwill and continued patronage. New Perfection Dropping Parts help to give you that kind of a product. They are convenient, attractive, dependable—manufactured and assembled under careful and constant inspection to assure the highest possible quality.

RUBBER BULBS are supplied in many styles and colors. Oil-resisting AMEKINE synthetic rubber is used for oil preparations; natural rubber is supplied for other products.

CAPS of plastic or metal can be furnished in a complete range of sizes and colors.

DROPPER GLASSES are available in a wide variety of styles and sizes; plain or CALIBRATED in any color to mark specific dosages.

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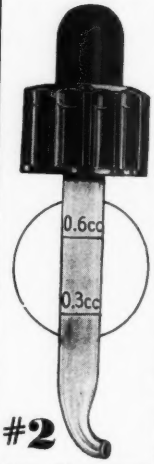
We can make up dropping parts to fit your own bottles or we can supply bottles in an attractive modernistic style in Amber, Blue, Green, or Clear glass, complete with dropping parts, in the following sizes: ⅛, ¼, ½, 1 and 2 oz.

• • • • •



#2

Non-rolling extra-depth Bakelite cap: thick flange rubber bulb; special bent glass. (Calibrated in color).

Write for Samples and Quotations

PENNSYLVANIA
GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

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as feed supplements and for the treatment of nutritional diseases."

The only claims involved in the case were the product claims, number 1 reading as follows:

"A vitamin B_{12}-active composition comprising recovered elaboration products of the fermentation of a vitamin B_{12}-activity producing strain of Fungi selected from the class consisting of Schizomycetes, Torula, and Eremothecium, the L.L.D. activity of said composition being at least 440 L.L.D. units per milligram and less than 11 million L.L.D. units per milligram."

The decision goes into considerable detail tracing the history of the developments in the field of pernicious anemia studies, the judge concluding as follows:

"It was known as early as 1926 that there was in liver, particularly that of cattle, some substance—or material or factor, call it what you will—that was beneficial in the treatment of pernicious anemia. It was also known that a healthy and maximum growth in young chickens was promoted by the inclusion in poultry feeds of some material which supplied what was termed the animal protein factor, and that this animal protein factor could be supplied by liver meal, among other things. It was also known at least long before the invention here claimed, that poultry thrived on feed containing dried cow manure and dried rumen. When it was known that the anti-pernicious anemia factor was found in the liver of cattle and the so-called animal protein factor was also found in the liver as well as in the stomach contents and in the manure of the same animals it seems that it would have been fairly obvious to the scientific mind to conclude, or certainly to suspect, that these beneficient substances were one and the same thing—or at least intimately related.

"Knowing that there was in liver some substance beneficial in the treatment of pernicious anemia, the problem was to isolate this substance or to obtain extracts and concentrates which in proper dosage could be administered to patients suffering from the disease. The plaintiff, along with other pharmaceutical manufacturers, embarked on and pursued this effort. Just when it became suspected that the anti-pernicious anemia factor could be derived from fermentation sources is not made clear. It was known in the early 1930's that some vitamins could be obtained nents of the vitamin B complex." from fermentation products; and in 1940 Miner obtained a patent (2,202,161) relating to the recovery from fermentation residues of "compositions containing compo- This patent describes a fermentation process involving the use of bacteria and, in its general outline, not too greatly unlike that described in the patent in suit. And in 1942 an article was published by the University of Texas showing that various B. vitamins were present in a number of fermentation sources.

"So far as appears Rickes and Wood up until July, 1947, had confined their work to efforts to isolate the anti-pernicious anemia factor in liver. It appears that a few months previously, in May, 1947, Dr. Stokes, of the Micro-biological Research Department of Merck, suggested that in the experimental work on the anti-pernicious anemia factor various sources of microbial fermentation be examined. Prior to this Dr. Shorb had disclosed the details of her essay procedure. At the suggestion of Dr. Stokes and with the aid of the Shorb assay method Rickes and Wood proceeded with their investigations with the results already noted. They had in June, 1947, obtained liver concentrates with a potency of 99,000 L.L.D. units per milligram. In September, 1947, they obtained from fermentation sources the concentrates, or compositions, which are the subject of this suit. And in December, 1947 they obtained from both liver and fermentation sources crystalline substances identical in composition and to which they assigned the name Vitamin B_{12} as representing the unadulterated form of the effective agent which they had been seeking to isolate."

The judge recognized the great benefit to the medical world of the discovery that a substance effective in the treatment of pernicious anemia could be produced from fermentation sources inasmuch as the discovery made possible a practically unlimited supply of something the use of which had heretofore been restricted because of the sources of supply, (i.e. from liver) in the matter of its administration.

Nevertheless, the judge felt that the contribution of the Merck inventors was not patentable stating:

"Put in brief and simple terms, what Rickes and Wood did was this. They knew that the anti-pernicious anemia factor existed in liver and they, along with many others, had already produced extracts or concentrates of liver containing a much higher degree of anti-pernicious anemia potency than is contained in liver in its natural state. While some of their colleagues continued the effort to isolate the anti-pernicious anemia substance in liver in its pure state, Rickes and Wood undertook the same work on fermentation sources. Both efforts were finally successful and the pure anti-pernicious anemia substances obtained from both sources were found to be the same. And just as the production of concentrates of liver proceeded the isolation of the pure substance (now called vitamin B_{12}) from that source, so did Rickes and Wood, in the course of their work with fermentation sources, produce concentrates of varying potency before arriving at the isolation of pure vitamin B_{12}. It would seem that in seeking to isolate some sought-for substance it is a common occurrence that the final result is preceded by obtaining a succession of concentrates each showing an increasing proportion of the substance sought for. It is these concentrates on which the patent was granted.

"These concentrates may be very crude as compared to pure vitamin B_{12}. Claim 1 is for a compound containing at least 440 LLD units per milligram. This represents a composition which may have a purity in terms of vitamin B_{12} of only .004 of 1 per cent, or, in other words is composed of 99.996 per cent impurities. The patentees have sought to cover the entire field of fermentation products from those containing as little as .004 of 1 per cent of vitamin B_{12} up to the pure product. And, as before stated, their reason for this is their claim that even this lower limit represents a product with a higher content of vitamin B_{12} than can be found in nature."

(Continued on page 262)

Representatives in: Philadelphia • Cincinnati • Chicago • Denver • Los Angeles • Montreal • Mexico City

NEWS...

Dr. Wing Succeeds Dr. Taylor

Dr. Henry Wing has been appointed acting head of the Clinton, Conn., laboratories of Chesebrough-Pond's Inc., replacing Dr. Walter Taylor who resigned as of July 1, according to Dr. Henry Kreider, the firm's director of research. Prior to joining the Clinton laboratories in January, 1955, Dr. Wing was director of research at Northam Warren Corp.

Dr. Kreider has also announced that two chemists, George W. Guttler and Chester F. Bovard, have joined the firm's Perth Amboy, N. J., research laboratory. Mr. Guttler came to Chesebrough-Pond's after spending seven years as a chemist with the Lambert-Hudnut Division of The Warner Lambert Pharmaceutical Company. Mr. Bovard joined Chesebrough-Pond's after five years with the Colgate-Palmolive Company.

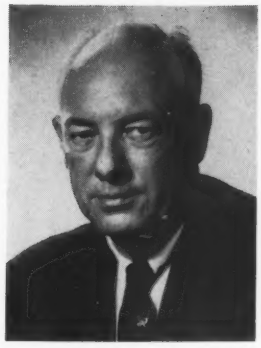
Don Baxter Trainee Program

Don Baxter, Inc. has established a program of summer research trainee positions for undergraduate chemistry students. Under this program, outstanding students are assigned research projects of real interest to the company, provided with competent guidance, compensated at industrial rates, and encouraged to complete and publish a worth-while technical paper.

David Lange of Caltech and Frederick Wolf of Pomona College have been selected for the 1957 positions. A paper by Richard Ashby of Caltech, research trainee in 1956, and Dr. Martin Roberts of Don Baxter, Inc., has been published covering the results of the 1956 investigation (J. Lab. Clin. Med. 49, 958 (June, 1957).

A. R. M. Boyle Retires

The retirement of A. R. M. Boyle after 32 years as treasurer of Lehn & Fink Products Corporation has been announced by Dr. Edward Plaut, president. He will continue as a member of the board of directors and will act in an advisory capacity to the company on fiscal matters.



KENNETH A. BONHAM

Bonham Heads Whitehall

Kenneth A. Bonham has become president of Whitehall Pharmacal Company, Walter F. Silbersack, president of American Products Corporation, parent company of Whitehall Pharmacal, has announced.

Mr. Bonham for six years was an assistant to Mr. Silbersack, who last March 16 appointed him vice-president and general manager of Whitehall. Before joining American Home Products Mr. Bonham was president of Emerson Drug Company.

New Norwich Post Created

The new position of director of inventory procedures and methods has been created at Norwich Pharmacal Co., and the former office manager of Eaton Labs, Edward Abildness, has been named to fill it, Thomas J. Eaton, vice-president, has announced.

Am. Home Prod. Pres. Asst.

John A. Cawley has joined American Home Products Corporation as an assistant to the president, Walter F. Silbersack. Mr. Cawley for the last two years has been president of George W. Luft Company. For the previous sixteen years he was with Miles Laboratories Inc., being vice-president when he resigned at the close of 1954.

JOHN A. CAWLEY

Fragrance Convention

The Fragrance Foundation will hold its eighth annual convention Sept. 17 at the Park Lane Hotel, New York. The business meeting, open to members only, will be held from 10:00 to 10:30 A.M., and will be followed by an open meeting. After a cocktail reception at noon, luncheon will be served in the Crystal Ballroom at 12:30. Reservations may be made through The Fragrance Foundation offices, 1 East 53rd Street, New York 22. Telephone: ELdorado 5-3168.

Warner-Chilcott Tech. Dir.

Dr. Theodore I. Fand has been appointed technical director of product development at Warner-Chilcott Laboratories, according to Dr. Leonard A. Scheele, Warner-Chilcott president.

Dr. Fand was formerly director of product development at Nepera-Anahist Laboratories. Nepera is now the Nepera Laboratories Division (ethical pharmaceuticals) of Warner-Lambert Pharmaceutical Company.

A graduate of Brooklyn College, Dr. Fand received a master's degree in chemistry at the University of Michigan, and his doctorate at Brooklyn Polytechnic Institute.

Gets Schering Grant

Dr. Gerald C. Mueller, associate professor of Oncology at the University of Wisconsin Medical School, has been named as recipient of the 1957 Schering Award of the Endocrine Society. The award comprises a cash grant of $2,500 and is presented annually to a scientist who has made a notable contribution in the field of endocrinology.

Dr. Mueller has chosen to study the biosynthesis of intracellular particulates. He plans to devote six months at the Max-Planck Institut fur Virusforchung in Tubingen, Germany to the study of virus reproduction and the metabolic interaction of the virus particle with the host cell. In addition, he will visit with European scientists and discuss problems of endocrinology and cell physiology with them.

Mead Johnson Inst. Dir.

Appointment of Dr. Robert W. Barclay as director of the Mead Johnson Institute has been announced by E. Donald Elliott, vice-president for personnel of Mead Johnson & Company. Dr. Barclay, who has had academic and practical experience in personnel development, will head up the company's new employee development and training center.

THE NOSE

Fancy and Fact

Fancy

According to Greek Mythology, Prometheus fashioned an image of a man out of clay, then snatched fire from the sun and held it to the nostrils of his clay figure. The figure sneezed and came alive.

Fact

PFW's great line of balanced perfume bases and specialties can make your products come alive with fragrances of great beauty and tenacity.

PFW

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Shulton Forms UK Firm

"Old Spice" products for men will be introduced to England through the creation of Shulton (Great Britain) Limited, according to an announcement by David Gregg Jr., International Division manager of Shulton, Inc. Great Britain becomes the sixth foreign country in which Shulton has a subsidiary operation and the 53rd in which Shulton products are available to consumers.

Mr. Gregg also announced the appointment of Geoffrey S. Sladden of London as manager of the new subsidiary. Mr. Sladden, former sales manager of Richard Hudnut Ltd., has returned to England after a six weeks' trip to the United States and Canada to study Shulton's merchandising and production methods.

The British company plans to establish in England a major source of supply of raw materials necessary for the overseas manufacture of Shulton products, and from which source other Shulton overseas organizations may draw. The British company also plans to supply Shulton toiletries and proprietary drugs for export.

Sterling Mkt. Staff Changes

Staff changes in the National Brands Division of Sterling Drug Inc. have been announced by J. N. Cooke, vice-president in charge of marketing and sales promotion. Wesley F. Tibbetts, assistant merchandising manager, has been appointed assistant to Mr. Cooke. James Lennox and Edward Rusak have been appointed assistant merchandising managers.

Elected Fellow of A.I.C.

Jesse H. Starkman, cosmetic chemist and assistant technical director of Van Dyk & Company, Inc., has been elected a fellow of the American Institute of Chemists.

JESSE H. STARKMAN

Francis C. Brown, left, president of Schering Corporation and president of the American Pharmaceutical Manufacturers' Association, presents the first in a "Medical America" historical map series to Dr. David B. Allman, president of the American Medical Association, aboard the Mayflower II docked in New York harbor. The first map is of New England and shows that Dr. Samuel Fuller came to this country with the Pilgrims on the original Mayflower in 1620. Present were Paul Alden Fuller, right, a direct descendant of Dr. Fuller, and Godfrey Wicksteed, of England, first mate of the Mayflower II.

McNeil West Coast Expansion

Implementing its expansion program for the West Coast, McNeil Laboratories has added five representatives to the region. David S. Lamont, McNeil's director of sales, has cited increasing population and medical facilities as direct cause of the expansion.

R. S. Keller of Long Beach, Calif. will serve Orange county. R. L. Shannon of Van Nuys will work in Los Angeles. Physicians and pharmacists in Los Angeles will also be served by M. H. Talmy and J. W. Stinson Jr. J. F. Grader of Tacoma has been added to the staff in that area.

Rubin Heads Brandeis Fellows

Samuel Rubin, president of Faberge Perfumes and creator of the Samuel Rubin Foundation for philanthropic endeavor, has been elected chairman of the Brandeis University Fellows.

SAMUEL RUBIN

Pharma-Craft Adm. Vice-Pres.

Robert H. Witt has been appointed administrative vice-president of Pharma-Craft Company, according to Frank F. Bell, president.

For the past five years, Mr. Witt has been director of the budget of Joseph E. Seagram & Sons, Inc.

Tailby-Nason Merch. Mgr.

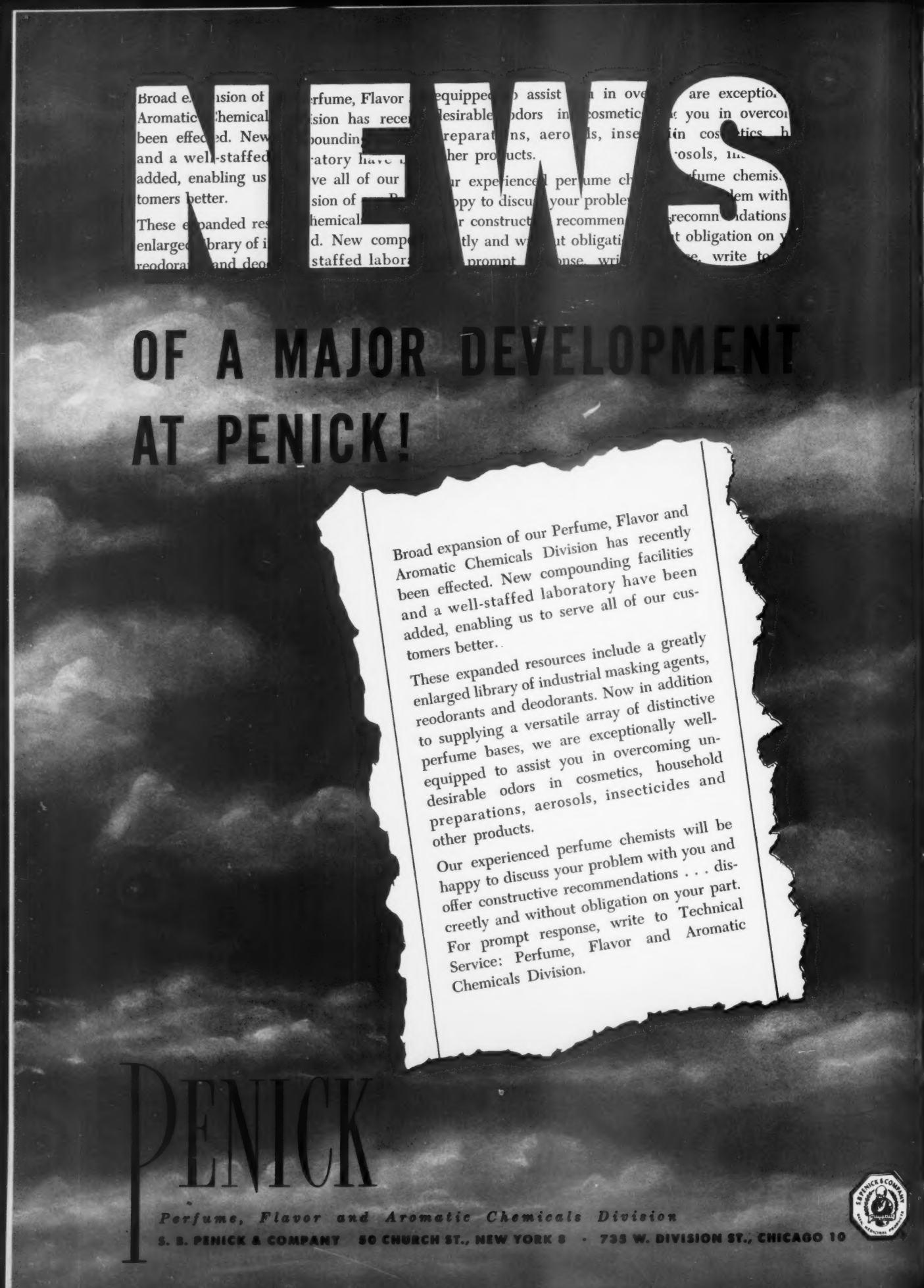
Irving Shelton has been named merchandising manager of the Tailby-Nason Company, Inc., according to W. O. Heinze, president of International Latex Corporation, parent company of Tailby-Nason.

New Chemical Sales Company

Formation of a chemical sales company, Jerdan Chemical Corporation, has been announced by Irving S. Margulies, president of the new firm. Mr. Margulies, formerly general sales manager of the Philipp Bauer Co., Inc., stated that Jerdan will specialize in the sale of pharmaceuticals and related products. Offices are at 489 Fifth Avenue, New York City.

Sconce in New Post

James S. Sconce has been appointed to the new position of technical assistant to management at Hooker Electrochemical Co., it has been announced by Dr. Earl L. Whitford, vice-president. Mr. Sconce has been manager of chemical research.


NEWS
OF A MAJOR DEVELOPMENT
AT PENICK!
Broad expansion of our Perfume, Flavor and Aromatic Chemicals Division has recently been effected. New compounding facilities and a well-staffed laboratory have been added, enabling us to serve all of our customers better.
These expanded resources include a greatly enlarged library of industrial masking agents, reodorants and deodorants. Now in addition to supplying a versatile array of distinctive perfume bases, we are exceptionally well-equipped to assist you in overcoming undesirable odors in cosmetics, household preparations, aerosols, insecticides and other products.
Our experienced perfume chemists will be happy to discuss your problem with you and offer constructive recommendations . . . discreetly and without obligation on your part. For prompt response, write to Technical Service: Perfume, Flavor and Aromatic Chemicals Division.
PENICK
Perfume, Flavor and Aromatic Chemicals Division
S. B. PENICK & COMPANY 50 CHURCH ST., NEW YORK 8 · 735 W. DIVISION ST., CHICAGO 10

RICHARD D. WATERS

Promoted by Abbott

Promoted to section managers for major aspects of development at Abbott Laboratories are Dr. Robert K. Clark, Jr., biochemical development; George M. Illich, Jr., chemical engineering development; Floyd C. Garven, organic development; and Dr. Paul R. Rasanen, pharmaceutical development.

In the area of experimental therapy, Dr. Laurence W. Roth was designated assistant administrator of experimental therapy. Dr. Floyd C. McIntire was named section head of cellular physiology, and Dr. Julius D. Taylor was designated section head of chemical pharmacology. Named group leaders in pharmacology were Dr. Guy M. Everett; Kao Hwang, M.D.; and John L. Schmidt, M.D.

Promoted in the area of microbiologic research were Dr. Walton E. Grundy, section head of microbiology, and Dr. Jacob C. Holper, section head of infectious diseases.

Witco Sales Director

Stanley M. Freeman, vice-president of Witco Chemical Co., has been appointed director of sales of the company's Organic Chemicals Division, it has been announced by Max A. Minnig, president. Mr. Freeman will have his headquarters in the Witco executive offices in New York City.

Mr. Freeman joined Witco in 1948 and was named vice-president in charge of sales and manufacturing for the Western Regional Division in 1951 with headquarters in Los Angeles.

Upjohn Promotes Brawley

John R. Brawley, sales supervisor of the Upjohn Company's South Georgia district, has been promoted to divisional sales manager of the Atlanta Branch, W. G. Freeman, the company's director of domestic branch sales, has announced.

Gampfer Merrell Chairman; Getman Succeeds Him as Pres.

Frank N. Getman, president of Hess & Clark, Inc., has been named president and general manager of the Wm. S. Merrell Company, another Vick Chemical subsidiary, succeeding Nelson M. Gampfer, president of Merrell, who has become chairman of the board of Merrell.

Richard D. Waters, Vick vice-president in charge of personnel, has been named president and general manager of Hess & Clark. He will continue as a vice-president of the parent organization.

Becco Market Research Mgr.

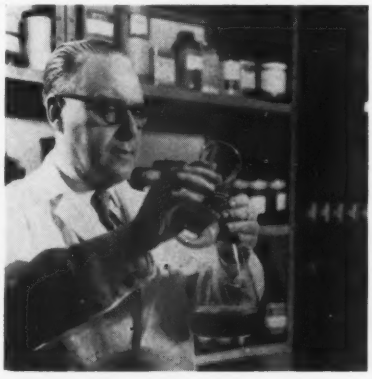
William H. Kibbel Jr. has been appointed to the newly created position of manager of market research for the Becco Chemical Division, according to an announcement by Frederick A. Gilbert, manager of the division.

Mr. Kibbel started with Becco's special projects department in September, 1947 as a chemical engineer. In August, 1949 he was transferred to the research and development department He was appointed a sales representative in June, 1952 for the West Coast territory and was promoted to manager of that territory in January, 1953. Mr. Kibbel will move to Buffalo, N. Y., to carry out his new assignment.

Joins Heyden Mkt. Dev. Dept.

Charles H. Shields Jr. has joined the market development department of Heyden Newport Chemical Corporation, E. C. Slaght, manager of market development, has announced. Mr. Shields was previously associated with General Electric Company as a product engineer.

Joseph P. Parentini, technical director of Roure-Dupont, Inc., has been elected to serve on the Research Council of the Lincoln College of Surgeons and Naturopathics.



FRANK N. GETMAN

Sterling Staff Appointments

Three regional merchandising supervisors have been appointed in the National Brands Division of Sterling Drug Inc. T. Austin, who has been merchandising supervisor in the Carolinas, Virginia and West Virginia, becomes Eastern regional merchandising supervisor.

Harold Mitchell has been appointed regional merchandising supervisor in the Mid-West and South, and will also call on customers in the Chicago area. Donald Brogan was named regional merchandising supervisor on the West Coast, where he will direct the division's marketing program as well as contact major customers in the Los Angeles area. In addition, he will act as Western sales supervisor for the National Brands Division staff in the Los Angeles area.

Shulton Fine Chemicals Reps.

Davis & Davis, Inc., 740 N. Rush Street, Chicago, has been appointed manufacturer's representatives for the Fine Chemicals Division of Shulton, Inc., it has been announced by Richard Brainard, vice-president of Shulton and manager of the Fine Chemicals Division. The Chicago firm will handle Shulton's full line of fine chemicals, which exceeds 50 different products.

Lehn & Fink Treas.

James W. Newman has been appointed treasurer of Lehn & Fink Products Corporation, according to Dr. Edward Plaut, president.

Assistant treasurer since 1938, a director since 1947 and secretary since 1955, Mr. Newman has been with the company since his graduation from Princeton University in 1926. Before joining the financial department he spent a number of years in other departments including sales, advertising and production.

Prof. G. Brouwers, Secretary General of the Ministry of Economic Affairs, The Netherlands, cuts ribbon during the dedication ceremonies of Merck Sharp & Dohme, Nederland N.V., Haarlem, Holland, first European plant to be completed by Merck & Co. In the background are M. J. Prinsen, Governor of North Holland; O.P.F.M. Cremers, Mayor of Haarlem; Miss Stephanie Reiche, daughter of Managing Director of plant; John T. Connor, President of Merck & Co., Inc.; Mrs. Connor; Anton Reiche, Managing Director of Merck Sharp & Dohme, Nederland N. V.

Laporte Elected a Director

William F. Laporte has been elected a director of American Home Products Corporation according to Alvin Brush, chairman. Mr. Laporte was elected vice-president of American Home Products March 1. He had been president of Whitehall Pharmacal Company, a subsidiary of American Home Products since December 1948. He is also a member of the operations committee of American Home Products.

Asst. to Eaton Sales Mgr.

Don Murray, former manager of the Pacific Northwest District of Eaton Laboratories, has moved to Norwich, N. Y., where he will be assistant to Frank Ault, Eaton's sales manager.

Ayerst Gen. Sales Supervisor

W. R. Sheridan, Boston district manager of Ayerst Laboratories, has been appointed general sales supervisor, W. Boyd O'Connor, president of the company, has announced. Mr. Sheridan joined Ayerst as a sales representative in 1946 and was promoted to the Boston district managership in 1952. In his new post he will make his headquarters in the New York office.

Jack Weisberg, clinical research associate in New York and New England for Ayerst, has been appointed Boston district manager. He joined Ayerst as a sales representative in New York City in 1951.

Brant to Harris Labs.

Joseph H. Brant, formerly director of waving research at the Toni Co., has been transferred to the Harris Research Laboratories, Washington, D. C., an independent subsidiary of the Gillette Co. In his new post, Dr. Brant assumes the responsibility for coordinating all Toni research activities in Harris Laboratories.

P&S Has Niro Spray Dryer

A Niro Spray Dryer has been installed in the recently completed addition to the Polak & Schwarz flavor manufacturing plant in Teterboro, N. J., according to an announcement made by Adolph Schwarz, president of the firm, during his recent visit to New York.

Mr. Schwarz stated his belief that the modern equipment plus his firm's years of experience in the spray drying field in Europe would make Polak & Schwarz a leader in the powdered flavor field.

To Show Colton Tablet Press At US Exhibit in Stockholm

The Arthur Colton Company has accepted an invitation by the U. S. Department of Commerce to participate in the U. S. Government Exhibit at St. Erik's Fair in Stockholm, Sweden from August 31 through September 16, it has been announced by Kenneth B. Hollidge, executive vice-president of Colton.

The U. S. Exhibit, which will stress automation, will be set up in the U. S. Government Pavilion at the Industrial Exposition. The Colton exhibit will be a standard Model 216 high speed rotary tablet press that produces compressed tablets from powder at a rate of 1,150 tablets per minute.

The tablets, which will be made in the form of 5/16-in. diameter candy, will be fed through a Colton tablet duster to a Pak-Rapid packaging machine which will assemble a multiple of tablets in a cellophane wrapper.

Penick Appoints Capkovitz

Stephen G. Capkovitz has been appointed manager of the Perfume, Flavor and Aromatic Chemicals Division of S. B. Penick & Company. Prior to joining Penick last January as a special technical representative, Mr. Capkovitz was head of the Perfumery Division of the Colgate Palmolive Company; chief chemist of three Vick Chemical Company subsidiaries — Prince Matchabelli, Inc., Seaforth, Inc., and Sofskin Company; and chief chemist of Yardley of London, Inc.

Edwin G. Allison has been appointed sales manager of the division and James Burgess, assistant sales manager.

Penick recently purchased Dow Chemical Company's Jersey City Aromatic Chemicals Compounding unit which is now being consolidated with the Penick operation.

W. R. SHERIDAN

STEPHEN G. CAPKOVITZ

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...to cover our experience

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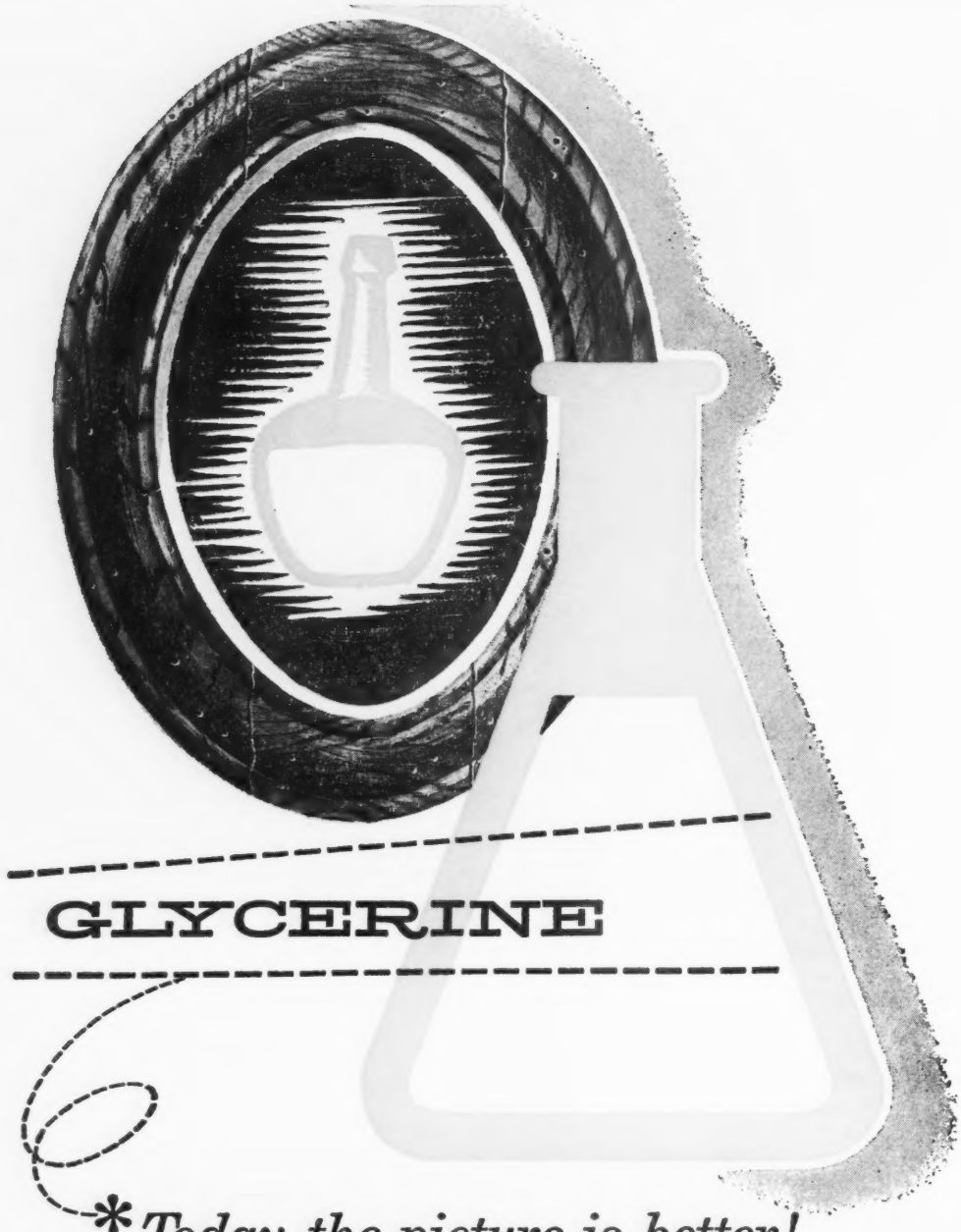

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SHELL

JAMES McINNES JR.

CSC N. Y. Sales Mgr.

James McInnes Jr. has been named manager of the New York district sales office for Commercial Solvents Corporation, according to an announcement by James V. O'Leary, general sales manager. Mr. McInnes replaces Arthur W. Luedeke, who will head the company's new Mid-Atlantic office with headquarters at Newark.

Mr. McInnes joined CSC in 1933, when it acquired the Rossville Commercial Alcohol Company with which he had been associated since 1929. He became assistant manager of the New York sales office in 1945.

Hooker Research Appointees

Hooker Electrochemical Co. is realigning its research and development staff in a continuing program of integration, it has been announced by Dr. Johannes H. Bruun, director of research and development.

New research managers appointed are Dr. J. Howard Brown, in charge of phosphorus chemistry research, analytical and physical chemistry laboratories, and another laboratory now being planned; Morton S. Kircher, in charge of inorganic and electrochemical research, and the Virgo laboratory, negotiations for licensing the Hooker cell, and research at the boron isotope plant in Model City which Hooker operates for the AEC; Dr. Jack S. Newcomer, in charge of organic chemical research which includes fluorine chemicals, agricultural chemicals, and organic synthesis.

Plough Acquires Coppertone

Abe Plough, president of Plough, Inc., and Charles E. Clowe, president of Coppertone Sales Corporation of Miami, jointly announced on June 14 the acquisition of Coppertone and its affiliated company, Douglas Laboratories Corporation, by Plough, Inc.

Vick Sr. Vice-Presidents

R. M. Dunning and H. A. High have been elected senior vice-presidents of the Vick Chemical Company.

With Vick since 1926, Mr. Dunning became assistant export manager in 1929, export manager in 1938, and general manager of the Vick International Division, when it was formed in 1945. He became a vice-president in 1940 and a director in 1943. Mr. Dunning is the member of the board of directors who specializes in international affairs.

Mr. High joined the Vick sales training program in 1929, was made sales manager in 1940, and general manager of the Vick Products Division in 1945. He was elected a Vick director in 1943 and a vice-president in 1948. Mr. High is the member of the board of directors who specializes in United States operations.

Fluorocarbon Salesman

Elbert E. Husted has joined the fluorocarbon sales department of Union Carbide Chemicals Company, it has been announced by John A. Field, vice-president of the Company. Mr. Husted will be concerned primarily with sales of fluorocarbons to the aerosol industry.

Mead Johnson Chemist

Dr. Bernard C. Lawes has been appointed associate senior chemist in the Research Division of Mead Johnson & Company, Dr. Ben King Harned, vice-president for research, has announced.

Irving S. Wright, M.D., right, Professor of Clinical Medicine at Cornell University Medical College and former president of the American Heart Association, is congratulated by Benjamin Schneider, president of The Purdue Frederick Company, on being selected a winner of the Medical Achievement Travel Award which is sponsored by Purdue Frederick. Dr. Wright announced that he is using the award to attend and participate in the International Congress of the European Society of Haemotology being held in Copenhagen, Denmark, this month.

JOHN A. FABER

Asst. to Schimmel President

John A. Faber has joined Schimmel & Co., Inc. as special assistant to the president, Gert Keller. Active in the 1953 formation of Schimmel Boehm Ltd., Schimmel's London affiliate, Mr. Faber was an officer of that company at its inception, having formerly worked in the essential oil section of Fredk. Boehm, Ltd. From 1949 to 1951 Mr. Faber was associated with the Glidden Company of Cleveland.

In New Sterling Post

Seaton Gales has been appointed to the newly created position of coordinator of sales promotion in the National Brands Division of Sterling Drug Inc. according to J. N. Cooke, vice-president in charge of marketing and sales promotion.

Mr. Gales will supervise the selection and purchase of all merchandising and display materials involved in promotional campaigns. Prior to his present appointment, Mr. Gales was assistant to Mr. Cooke and, from 1955 to February 1957, an assistant merchandising manager in the National Brands Division.

Schieffelin Expanding

Purchase of a 126,000 square foot plot in Brooklyn for the construction of a modern 60,000 square foot building to house additional distribution facilities for its expanding Wholesale Drug Division has been announced by Schieffelin & Co.

The new plant will serve the company's retail drug accounts in the Brooklyn and Long Island areas and will relieve the over-taxed facilities at Cooper Square, which will continue to serve other metropolitan and adjacent territories, according to Charles C. Caruso, vice-president of Schieffelin & Co., and director of its Wholesale Drug Division.

The Height of Appeal

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Du Pont to Build Lab To Aid Lysine Research

A new research and development laboratory for the Electrochemicals Department of E. I. Du Pont de Nemours & Co., Inc. will be constructed at Niagara Falls, it has been announced by Dr. Campbell Robertson, laboratory manager.

The laboratory will offer added facilities for scientific investigation of lysine and will also serve as a center of research activities related to other phases of the Electrochemicals Department's business. The building and equipment will cost approximately $2,500,000 and is expected to be ready for occupancy by fall, 1958.

ACS Elects Biel

Dr. John H. Biel, chief of the chemistry division at Lakeside Laboratories, Inc., has been elected to the office of counselor by the American Chemical Society section in Milwaukee.

Joins Baxter Labs.

Dr. Bernard M. Regan has joined the chemistry research staff of Baxter Laboratories, Inc. He previously was active in industrial and synthetic chemistry with the Glidden Company and Julian Laboratories, Inc.

Becco West Coast Mgr.

Promotion of Vernon E. Moore to manager of the West Coast territory of Becco Chemical Division, Food Machinery and Chemical Corporation, has been announced by Dewey H. Nelson, Becco's sales manager.

E. W. KISTNER

Colton's Chicago Branch Mgr.

E. W. Kistner has been appointed branch manager of the Arthur Colton Company's Chicago office at 5807 West Diversey, W. A. Doepel, sales manager of the company, has announced.

A sales engineer in the company's New York office for the past two and a half years, Mr. Kistner will direct activities of the Chicago Sales engineering staff in Minnesota, Wisconsin, Iowa, Indiana and Illinois, in addition to St. Louis, Mo. and Louisville, Ky.

Promoted by Lilly

John R. Pollard and Merrill G. Tucker have received promotions to managerial positions within Eli Lilly International Corporation's financial division. Mr. Pollard becomes manager of the international credit department, while Mr. Tucker has been named manager of the newly established international financial statement and budget department.

WILLIAM NELSON

Kohnstamm West Sales Mgr.

Appointed sales manager of the Western Division of H. Kohnstamm & Co., Inc. is William Nelson, who also continues as assistant secretary of the firm. His headquarters will remain at the Chicago branch.

Mr. Nelson started with the company in 1922 as a boy, working under the direction of the late Hugo Pulver, vice-president and director of the firm.

Mead Johnson Med. Directors

Dr. Rinaldo V. Kron, formerly civilian medical director at the Puget Sound Navy shipyard, has joined Mead Johnson & Company as medical director of the firm's Parenteral Products Division, according to an announcement by the company.

At the same time Dr. Michael J. Sweeney, formerly associate medical director of the company, was appointed medical director of the Mead Johnson Nutritional and Pharmaceutical Products Division, the announcement stated.

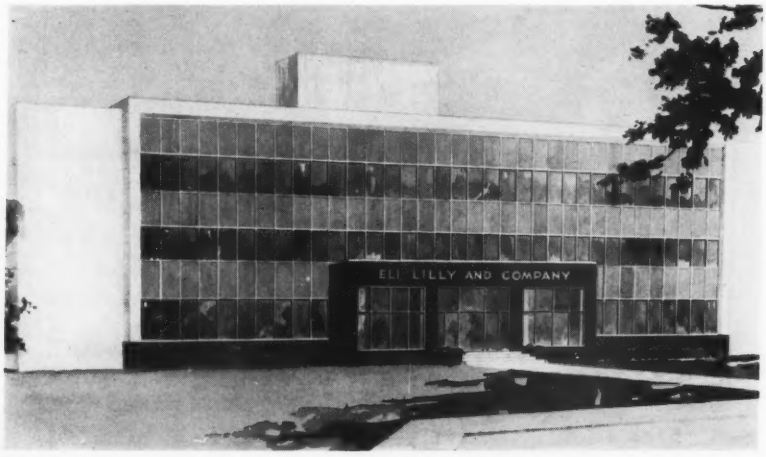
Savadove Rejoins Vick

Laurence D. Savadove has rejoined Vick Chemical Company's International Division as special assistant to the Pacific Far-East Overseas Director. In this newly created position, his initial assignment will be in Japan. Mr. Savadove returned to Vicks from RKO Teleradio Pictures, Inc., where he was copy chief for WOR and WOR-TV.

Joins Labs for Pharm. Devel.

Ernest J. Sasmor has been appointed director of product development for the Laboratories for Pharmaceutical Development Inc., it has been announced by Robert H. Broh-Kahn, M.D., president. Mr. Sasmor was formerly in charge of product development for Nepera Chemical Co.

Window-wall construction, with alternate bands of glass windows and solid aluminum panels, will be a feature of the new three-story office building to be constructed by Eli Lilly and Company at its McCarty Street plant in Indianapolis. The building is designed to accommodate nine additional stories, which may be added as they become necessary. Completely air-conditioned, it will house marketing and office-automation departments. Excavation is already under way, and construction of the superstructure is expected to start before Sept. 1.



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Penick UK Associate Firm Acquires British Company

C. F. Gerhardt Ltd. of London, British associate of S. B. Penick & Company, has acquired the assets and good will of Huffer & Smith Ltd. of Croydon, England.

Established in 1864, C. F. Gerhardt Ltd. specializes in botanical drugs and associated products. Huffer & Smith Ltd. will continue to manufacture a range of fine chemicals.

R. Gordon Archer, who was appointed managing director of Gerhardt in 1952, will continue in this capacity and will also be managing director of Huffer & Smith Ltd. Operations of both companies will be conducted at Purley Way, Croydon, Surrey, England.

N.A.R.D. Convention

Senator Karl Mundt of South Dakota and H. E. Chapman of London, England, secretary of the Proprietary Articles Trade Association of Britain (in many respects similar to the National Association of Retail Druggists) will be headline speakers on the program of the 1957 convention of the N.A.R.D. to be held in Minneapolis Oct. 6 through 10. Other featured speakers will include Representative Wright Patman of Texas (chairman of the House Select Committee to Conduct a Study and Investigation of the Problems of Small Business) and Commissioner George P. Larrick of the Food and Drug Administration.

Charles B. McDermott, vice-president and director of sales and promotion, Winthrop Laboratories, will deliver an address entitled "Toward Unity in Pharmacy."

"Manage or be Managed" is the subject to be discussed by Herman W. Leitzow, vice-president of Schering Corporation.

Bajak Appointed by Cyanamid

H. W. Bajak has been appointed assistant general sales manager of American Cyanamid Company's Fine Chemicals Division, it has been announced by J. H. Ruskin, general manager of the division.

Brooks Enters New Field

The resignation of Leonard S. Brooks as general manager has been announced by P. R. Dreyer Inc. Mr. Brooks is becoming associated with Bennett Industries, Peotone, Ill., manufacturers of steel containers.

ARTHUR W. LUEDEKE

CSC Mid-Atlantic Office

Commercial Solvents Corporation has opened a Mid-Atlantic office with headquarters at 196-202 Blanchard Street, Newark, according to an announcement by J. V. O'Leary, general sales manager. The office will serve New Jersey, eastern Pennsylvania, Maryland, Delaware, District of Columbia, Virginia and North Carolina.

Arthur W. Luedeke has been appointed manager of the new district. Mr. Luedeke joined CSC in 1937, becoming district manager of the Cleveland Office in 1941, and of the New York Office in 1952.

Joins Purdue Frederick

Marvin S. Weinberg has been appointed to the field staff of The Purdue Frederick Company and assigned to the Manhattan territory, Seymour A. Lubman, assistant vice-president in charge of sales and marketing, has announced.

At Idlewild Airport the Honorable Mohammad Goudarzi, left, Consul General of Iran for New York, accepts a gift of 13,000 vials of Crysticillin donated by the Squibb Division of Olin Mathieson International Corporation for earthquake victims in Iran. Herbert G. Wolf, center, Squibb Export Division general manager, is shown handing Mr. Goudarzi documents transferring ownership of the Crysticillin. With him is Marcel W. Zyto, Squibb sales manager for the Middle East.

Sunkist Pharmacologist

Appointment of Dr. Tracey G. Call as pharmacologist to the research staff in Corona, Calif., under the direction of Dr. G. H. Joseph has been announced by W. E. Baier, manager of Sunkist Growers Research Department. Dr. Call joins the Sunkists team of scientists engaged in the investigation and development of citrus derivatives of nutritional and medical significance.

Grant H. Palmer, who has been associated with Sunkists' Research Department at Corona for the past seventeen years, has been transferred to the Sunkist Growers Products Department at Ontario, Calif. according to R. C. Bruner, head of the Pharmaceutical Division. Mr. Palmer will be actively engaged in technical service and the coordination of clinical contacts.

Walter R. Anyan

Walter R. Anyan, secretary of The New Jersey Zinc Company, died July 25 at the Greenwich, Connecticut, Hospital. He was 60 years of age.

Mr. Anyan started his employment with the company in 1915 and progressed through the organization to become secretary in 1948. He was a graduate of Polytechnic Institute of Brooklyn.

Surviving are his widow, Ellen Newman Anyan, and a son, Walter R. Anyan, Jr.

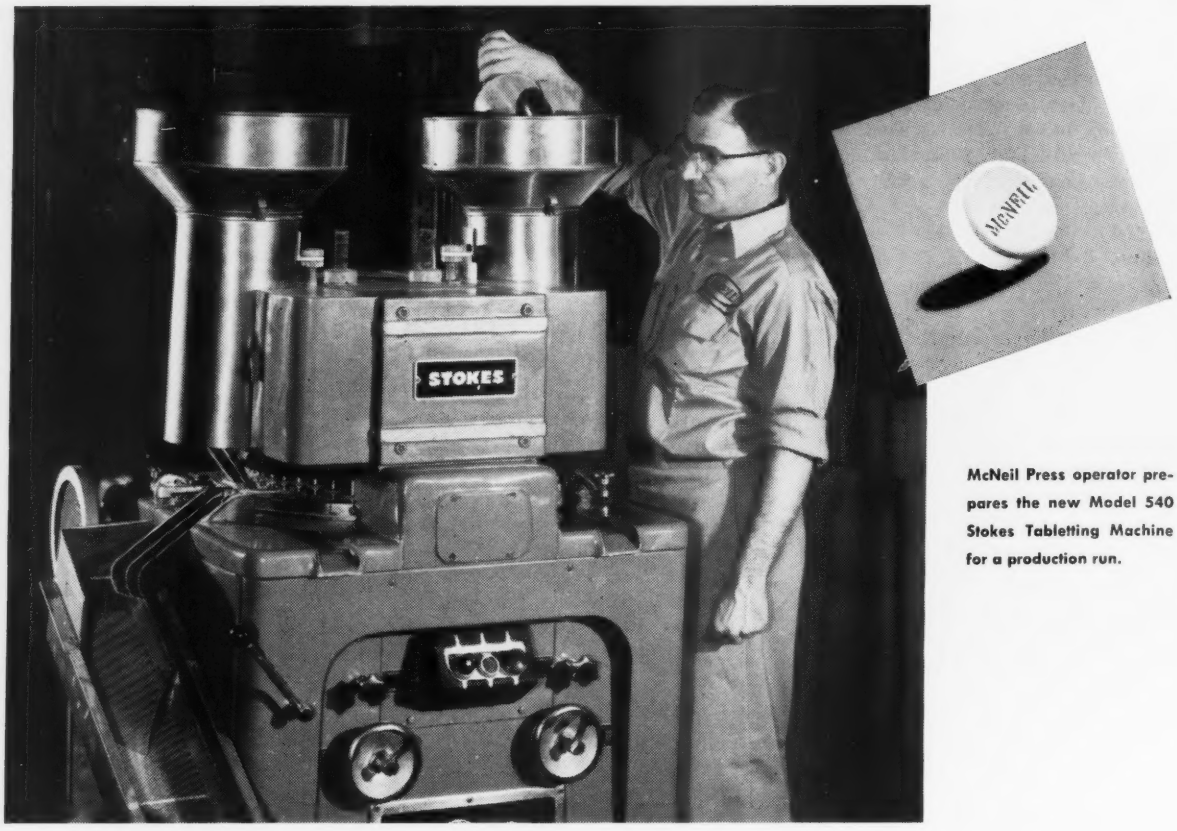
Dr. Marvin A. Spielman

Dr. Marvin A. Spielman, 51, director of research evaluation at Abbott Laboratories, died July 11 after a heart attack. Noted particularly for his work on anti-epileptic drugs, Dr. Spielman had been a member of the Abbott organization since 1940.

Dr. Spielman came to Abbott as a senior research chemist and was named group leader in chemistry in 1946, head of organic research in 1949, and director of research evaluation in 1956. He received the Abbott Research Award in 1948 for outstanding scientific contributions.

Author of about 40 published scientific papers, and holder of more than 70 American and foreign patents, Dr. Spielman also was the author of a number of chapters for textbooks in the fields of organic and medicinal chemistry.

He is survived by his widow, Marie C.; three children, Philip M., 16, Carol E., 14, and Richard J., 11; and two brothers, John P., and Galen.



McNeil Press operator prepares the new Model 540 Stokes Tabletting Machine for a production run.

McNeil Laboratories produces Flexin® tablets on new Stokes 540 rotary

Tablets Flexin® Zoxazolamine are being produced on the new Stokes Model 540, 41-station machine at the McNeil Laboratories, Inc. plant, Phila., Pa.

Flexin®, an original McNeil Specialty, is used as a lissive agent in the treatment of musculoskeletal disorders and neurological diseases. The tablets are $^{13}/_{32}$" in diameter—embossed and scored.

The Stokes Model 540 is fast, precise and smooth operating. It is the easiest machine to set-up and adjust that has ever been developed for tabletting. All controls and adjustments are readily accessible on a single panel within easy reach of the operator. Centralized pressure lubrication, greater overload protection and conservative output ratings contribute to long, dependable production life.

Find out how the new Stokes Rotary Tabletting machines can save on your own production. Write or call your nearest Stokes office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Management Forum

by Francis Chilson

INDUSTRIAL CONSULTANT

London Diary

To the Mirabelle. . . Lunch with Walter Poucher, dean of English speaking cosmetic chemists and perfumers and author of 'Perfumes and Cosmetics,' the first work of its kind in the English language, and Sydney Field, managing director of Firmenich of England and himself a perfumer and organic chemist of note. I was much impressed with Walter Poucher as I had not realized that he is a top flight organic chemist as well as an internationally known perfumer.

I had not known Syd Field before this trip to London although I had exchanged some correspondence with him occasionally. Syd Field looks a proper British toff,—old school tie, furled umbrella and gray topper—who speaks Oxonian with a Cambridge accent. He looks so meticulously the proper gentleman that you might suppose him capable of wearing his gray topper to bed in lieu of a night cap. Having had a good many 'night caps' with him during my stay in London I can assure you appearances are deceiving when appraising Englishmen, particularly so when appraising Syd Field. During the war he was a cloak-and-dagger man for British intelligence and he captured the most beautiful girl in France, which proves his own intelligence beyond any question of doubt. I don't know what he did for the British Empire but he did plenty for himself. Martine, his wife, is a stunner with a magnificent sense of humor, keen intelligence and quick Gallic wit. Gor blimey, what a package! Some blokes have *all* the luck.

Had a lovely party one night with the Fields and Freddie Wells, editor of Soap, Perfumery & Cosmetics. Freddie and Syd are not only staunch *conservatives* but almost abject admirers of Winnie Churchill (sic). Syd and Freddie are going to establish their own party which will have as its basic object, the destruction of snobbery in all forms and in all places. Lovely, quite mad people. . . Aldershot. . . For a week end with my good friend, Major General W. A. Lord, commander of all British mechanized forces. Lord is a most extraordinary Englishman, a brilliant engineer, who without benefit of titled or political connections, old school tie or Sandhurst, rose from first lieutenant to the very top of the British army. We had a magnificent party at his home with a lot of military types and their wives. I don't remember much about it but I seem to recall vaguely that everybody seemed tight but me. The following morning the General prepared and served my breakfast because his wife was a bit *hors-de-combat*. There's an honor for you! I'll bet I'm the first Yank since the Revolution who has had his breakfast served by a British major general. I'll bet George Washington is grinning in his grave!

To the Coppice, Great Missenden. . . to visit "Sir John" Walmsley, and his lovely wife Lois. John is now managing director of E. R. Squibb & Sons Ltd., London. Sir John's new home is a beauty with two acres of English gardens about it. John is working like hell on his new job so I didn't see much of him. Thank God! He sends regards to all his friends here.

Notes: Gasoline rationing is off in England. Traffic is clotting up—in spots it is as bad as New York. Everybody is working and there is an evident optimism in the atmosphere in spite of the fear of inflation which hangs like smog over the Exchecquer.

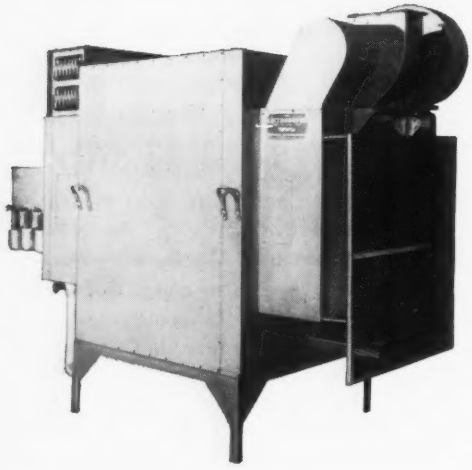
To Amsterdam. . . to visit the new Dutch factory of Aspro-Nicholas. This was built in accord with the principles I laid down for the design of the Australian and English factories. The company was fortunate in retaining an experienced Dutch architect, who is a specialist in industrial architecture, and he followed the layouts made by my English engineering colleague Dick Seymour exactly and with no nonsense. The result is a small, efficient plant that looks like a jewel box. What is most important the plant was finished ahead of schedule and with no additions to the original budget. I wish I had had this Dutchman working with me on the English plant.

To Brussels. . . to inspect the Aspro-Nicholas

What do you mean

hot and humid?

Temperature 38°, humidity 98%—mid-winter, but just about as nasty and uncomfortable a day as you could imagine. The high humidity made it so.



It doesn't have to be hot to be humid!

Like people, many a process suffers from too much moisture in the air, even when that air is *cold*. Out of doors, fog forms to warn you of its presence. Indoors, unfortunately, high humidities are not so apparent, and we're not aware of moisture in the air surrounding us.

If moisture were pink, we'd be living in a world of color—you'd see this danger signal and take steps to remove the water from the air. Without this warning, processors must be continually on the alert, measuring humidity and controlling it.

Lectrodryer* offers a solution

Our engineers will advise on ways of insulating workrooms against moisture infiltration. They'll help you select dehumidification equipment and controls. The booklet, *Because Moisture Isn't Pink*, tells how Lectrodryers are doing this DRYing job for many industries.

For a copy, write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd Street, Pittsburgh 30, Pennsylvania.

Air-Drying

Lectrodryer

*REGISTERED TRADEMARK U. S. PAT. OFF

factory there and to inspect plant sites for the construction of a new one. The plant is now split up into three locations and a plan is afoot to build a new factory to care for the increasing needs of this rich little country. Belgium is thriving and prices are about as high for essential commodities as they are in the U. S. Since salary scales are by no means comparable I don't know how the ordinary Belgian lives.

To Manchester. . . to inspect the new ICI pharmaceutical research laboratories. Provision has been made for housing 350 research workers. The laboratories are ultra modern and were built on a beautiful old English estate in such a way as to take full advantage of the magnificent scenery.

To the House of Commons. . . to dinner in the House with Sir Ian and Lady Fraser. Sir Ian is the famous blind MP. He is an altogether brilliant man who speaks the most beautiful English I have ever heard. It is beautiful because it is accentless, fluent and rhythmical. Sir Ian is a director of Aspro-Nicholas and one of the principal owners of a highly specialized metallurgical company that is known the world over, especially in the rare metals field. Sir Ian showed us the chapel and crypt under the House of Commons. Neither is open to the public, so to me this was a rare occasion. The little ancient gothic chapel is gorgeous. Once a Catholic chapel it is now non-sectarian and the MPs have their children baptised there.

To Slough. . . to inspect the new Aspro-Nicholas factory which is being built along the Bath road. This factory will be in full operation by the end of this year. It comprises a quarter million feet of space including offices, labs and personnel facilities. With its counterpart in Australia these two factories will be the most efficient pharmaceutical factories in the world. I have had a hand in designing both of them as far as interiors are concerned.

They afford an interesting contrast between English and Australian working methods and a lesson on the importance of having an experienced industrial architect on a factory job.

The Australian plant is almost as large as the English plant—197,000 square feet to be exact. It contains the same facilities insofar as personnel, offices and incidentals are concerned but not on so large a scale as the English plant. Both plants are designed basically to make the same products. The Australian plant was supervised by an experienced industrial architect; the English plant was not. The Australian plant was started six months after the English plant and is now in full operation six months ahead of the English plant. A letter from one of the Australian directors informs me that final costs were within 2,000 pounds, Australian, of the original budget. I wont say anything about a similar comparison in England!

But this I am sure of: the English plant will never sink into the mud. Although it is built on very hard clay the English architect saw fit to provide a floor which totals thirteen inches of cement of one form or another. Even in the personnel corridor where no trucking will ever be done, the floor is thirteen inches thick. I am quite sure none of the employees will ever sink into the mud or get wet feet walking over such a floor. My original specification called for a six-inch reinforced monolithic concrete slab. But there'll always be an England and there'll always be a floor in the Aspro-Nicholas factory.

This floor is a monument to the inexperience of the English architect, who when he was hired, was supposed to have had extensive industrial experience, but, as it turned out too late, had had none. On his recommendation four inches of concrete screed were spread upon the graded surface over the hard clay or hard pan because it would prevent the heavy steel and concrete trucks or lorries from sinking into the clay during wet periods. This it did all right; it was so strong and so firmly based that it withstood heavy trucking all during the construction period without cracking. I insisted on finishing it off with a two inch, reinforced monolithic slab to provide a total of six inches as originally specified. This was ignored by the architect and a six inch reinforced concrete slab was put down over the four inch base. Then to add absurdity to absurdity, a polyethylene liner was laid down over the whole of the reinforced slab after the slab was thoroughly dry and then a final slab three inches thick, which in England is called a "granolithic finish," was poured over the polyethylene liner, thus creating a thin slab that is not reinforced and is not bonded to the sub-floor to withstand the wear and tear and the beating heavy fork trucks will give it. I anticipate that within a year the granolithic slab will all be cracked to bits. A floor must withstand concussion, vibration and compression. This floor will take all the compression in the world but it is the other two factors that worry me.

All this goes to show how damned careful you have to be in selecting an architect for a factory construction job, which, as I have said before, is not really an architectural but an engineering job. I have found repeatedly in working on factory projects with inexperienced architects that the less experience they have the more inflexible they are. They are not one damn bit interested in construction costs or in giving you what you want or must have. They insist upon giving you what *they* think you need. In the Aspro-Nicholas plant, fortunately, I was able to keep the architect from changing the layout of the interior facilities—plant offices and personnel services—but not without some bloody battles in which the management supported me. The architect was left to his own devices in designing the main entrance lobby, the patio and the directors' suite. He did a wonderful job on the directors' offices!

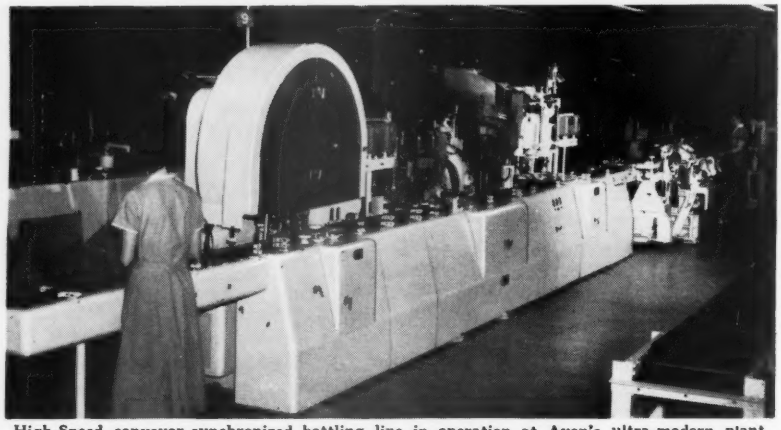
However, in spite of some money wasted in England on excessively heavy construction, I can assure you

THE LEADERS LOOK TO PNEUMATIC

- New plants Pneumatic equipped
- Avon Products Inc., example
- More speed, flexibility provided

Where "modernization" is the order of the day, packaging is coming in for particular attention. More often than not equipment now in operation has been made obsolete by new design Pneumatic machines — developed for the faster, more efficient handling of dry, free flowing materials, as well as liquids and semi-liquids.

Pneumatic engineers have been exceptionally busy in the last few years, shattering previous standards of productivity through radically different approaches to the mechanics of packaging. Waste eliminating accuracies, and cost cutting speeds never before achieved, now feature the performance of the latest Pneumatic machines.



High-Speed conveyor-synchronized bottling line in operation at Avon's ultra-modern plant in Morton Grove, Illinois.

Leaders in their field — such as Avon Products Inc., makers and merchandisers of a line of nationally known cosmetics — are acutely aware of the absolute necessity to keep up-to-date in the all-important packaging phase of their production. In their sparkling new plant at Morton Grove, Illinois, their famous Avon Skin Freshener and Avon After Shaving Lotion, get the full treatment — from container cleaning right through filling, capping and labeling — on the very latest, fully synchronized high-speed Pneumatic lines. Without the slightest hesitation, on spaced centers to prevent jar or jostle from contact, the containers flow through the different stages as smoothly as oil through a pipe, with never a hand laid on them, from beginning to end.

Outstanding features of this equipment are the extreme gentleness with which it handles delicate, easily marred caps, and its easy adaptability to changes in container shapes and sizes. Within unusually broad limits, shifts from one to another may be made in short order — with minimum down time. Bottling will never be a bottle neck in this plant.

Keeping containers moving through the line with such automatic regularity and precision as to result in "lower cost per container" handling is a habit with Pneumatic machines. That, no doubt, is the reason why the country's leading producers have the habit of using them so extensively. Doubtless, also, it is the reason why so many other concerns "follow the leaders" to Pneumatic.

★ ★ ★ ★ ★

PNEUMATIC SCALE CORP., LTD.,
70 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto

★PNEUMATIC

that when the English factory is in full operation Aspro-Nicholas will have two factories that will challenge comparison on an operating efficiency basis with the best in the world.

The Chemical Engineer's Tomorrow

A great deal of intensive research is under way on controlled power production from fusion, i.e., the thermonuclear (hydrogen bomb) reaction. Though no practical method is yet in sight, the researchers are rather optimistic. Being an optimist myself, I feel that there is a good probability that we will be able to harness this thermonuclear reaction for practical purposes within the next generation. I feel that the basic research answers will have been obtained within the next decade. This, of course, is pure speculation, but I think that the history of past successes in difficult fundamental research lends substance to the optimism.

When we begin using nuclear power plants, there will be a tremendous amount of excess energy available in the form of neutron and gamma radiation which will be largely wasted, except as it appears in the form of heat. In all probability there are a number of chemical reactions which, by photochemical processes, could utilize the neutron and/or gamma radiation and store the energy in the form of chemical compounds, very much as the energy of the sun is stored in the chemical compounds of plants through the photosynthetic process. Perhaps some of these photo-chemical reactions could produce satisfactory liquid fuels from carbon dioxide and water, or other commonly available chemicals. Very little chemical research has been done along this line. It is my feeling that we should begin to find out what the possibilities are.

In his quest for minerals, man can look to the sea Here, we have a great deal to learn from nature, because many of her organisms have evolved an art of concentration of minerals from sea water and have carried it to a high degree of effectiveness. Oysters, for instance, build up a concentration of copper on the interiors of their gelatinous bodies which is several hundred-fold greater than it is in sea water. Ordinary kelp (one variety of seaweed) builds up high concentrations of both potassium and iodine. Perhaps the gourmet does not care to think about it but the lobster has a concentration of iodine in its interior structure which is several hundred thousand times greater than that of the surrounding sea water. The slimy sea cucumber is a stupid and unattractive fellow but he is able to store up ten per cent of vanadium in his respiratory tract. This is many thousand-fold more concentrated than it is in the sea water in which he lives. If we understood the base-exchange and other selective processes which are going on in these low organisms, we might very well find practical ways of recovering large quantities of various minerals from the sea.

Now, put these factors together and visualize with me what might be done with an industrial complex built around a large nuclear power plant located on a seashore. Such an establishment, if organized in an appropriate manner, might operate profitably by producing the following:

1. Electrical power.
2. Liquid fuel, which would be produced by the photochemical reactions of neutron and gamma radiation on carbon dioxide and water, or similar materials.
3. Fresh water from sea water, which would be produced by a combination of electrochemical operations, diffusion, and evaporation which would utilize the waste heat from the nuclear reactor.
4. A number, say ten, of the valuable minerals which would be extracted from the sea water which had already been processed for its fresh water.

All this would require large and complicated apparatus, many parts of which we cannot visualize as yet; and it would call for an industrial organization which would be unique from our present point of view. However, the laws of nature and our technical competence might very well permit us to carry out such a consolidated operation on a practical basis.

—From an address by C. C. Furnas, Buffalo University.

Drum Pump

Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, have a metering pump for metering or pumping toxic or corrosive chemicals from 55 gallon drums to processing points. Capacities are adjustable from zero to maximum of four gph. Accuracy said to be within 1 per cent. It will pump against pressures up to 100psi.

High Speed Mixer

For liquids, suspension and semi-solids the Kady Mill offers a combination of mixing and homogenizing action that is fast and thorough. This machine is widely used in the paint industry for all sorts of mixing and dispersion problems. Since the mixing problems of that industry and ours are similar I suggest you investigate this equipment. It is made by Kinetic Dispersion Corporation, 95 Botsford Place, Buffalo, New York.

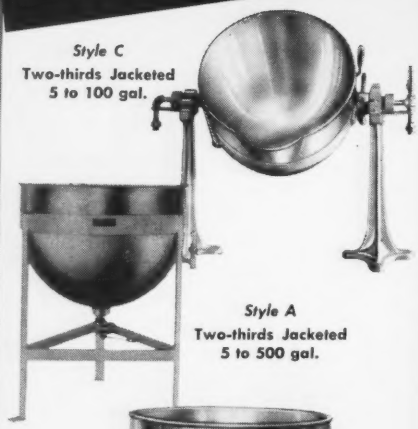
Conveyor Turn

The need to turn containers and shipping cases at a 90° angle often presents problems. Stewart Glapat Corp., 1639 Moxahala Ave., Zanesville, Ohio, are offering a turning section for belt conveyors that has neither a turn table in it nor a guide rail. The turning is done by narrow belts riding in grooved pulleys.

New Mixer

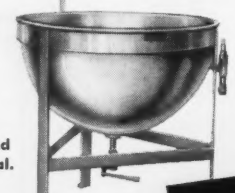
Strong Scott Mfg. Co., 451 Taft St., Minneapolis, 13, have introduced a new powder mixer called the Turbulizer which features adjustable pitch paddles

COOKING KETTLES

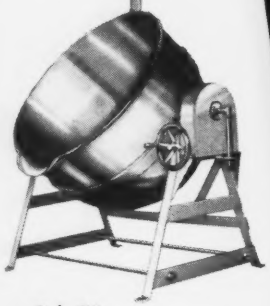


Style C
Two-thirds Jacketed
5 to 100 gal.

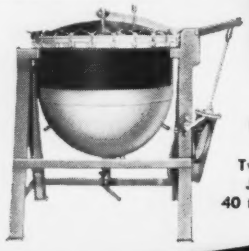
Style A
Two-thirds Jacketed
5 to 500 gal.



Style B
Full Jacketed
10 to 300 gal.



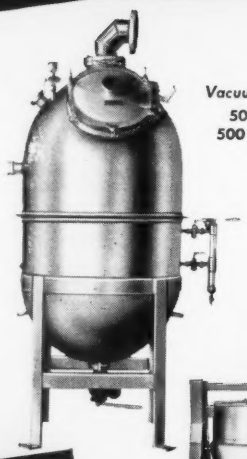
Style CW
Two-thirds Jacketed
80 to 300 gal.



Pressure Kettle
Two-thirds Jacketed
40 to 200 gal.

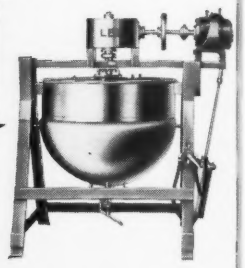
MIXING AND BLENDING UNITS

CW3T
Center-line Scraper Agitator Kettle
80 to 300 gal.



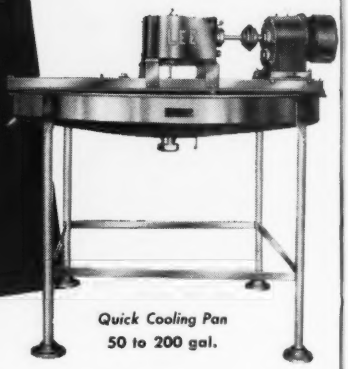
Vacuum Pan
50 to
500 gal.

D3T
Center-line Scraper Agitator Kettle
25 to 300 gal.



these LEE Units

WILL REDUCE YOUR PROCESSING COSTS!

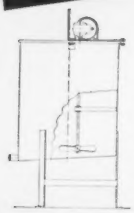


Quick Cooling Pan
50 to 200 gal.

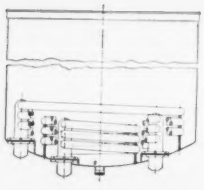
Individually designed for a specific processing operation and available in a wide range of sizes to fit your exacting requirements, Lee corrosion-resistant equipment is built to give you long years of peak performance with minimum maintenance.

Descriptive bulletins are available for any or all of the above units. Write for them today and discover how Lee can help reduce *your* processing costs.

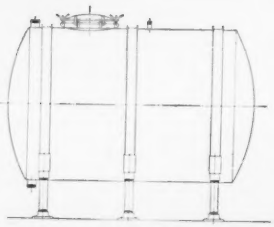
MIXING, COOKING & STORAGE TANKS



Mixing Tank
25 to 500 gal.



Pulp Tank
500 to 2,000 gal.



Storage Tank
100 to 5,000 gal.

LEE METAL PRODUCTS CO., INC.

408 PINE STREET,
PHILIPSBURG, PA.

ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

and is designed to deal with powdered materials that have a tendency to ball up or agglomerate, and also for dispersing small quantities of aqueous or oily materials in dry powder. This suggests its use as a granulation mixer and as face powder mixer. I haven't seen this equipment in operation yet but it looks useful for our trade.

Self-Contained Freeze Dryer

A new, self-contained, vacuum freeze dryer just introduced by the Vacuum Equipment Division of F. J. Stokes Corporation, Philadelphia, combines for the first time the efficiency of larger industrial units with the flexibility of small laboratory-scale models. The new Stokes unit, Model 2003F2, is therefore especially suitable for research and development work as well as moderate-scale production.

With the new Stokes unit, the product to be dried may be first pre-frozen on the two lower plates or shelves, which are chilled to minus 40° F. by direct expansion of Freon 22. The product is then transferred to the two upper shelves where it is dried under high vacuum by sublimation. The two 12" x 24" drying shelves provide a total drying area of four square feet. The two lower refrigerated plates serve as the condenser plates during the drying cycle, and have a condensing capacity of up to 5 liters of water per batch.

The Model 2003F2 is a completely self-contained unit, having its own electrically heated hot water system, thermostatically controlled, for positive forced-feed circulation through the drying shelves. This system, as well as the Freon compressor and other accessories, is housed in the cabinet below the vacuum chamber. A high-capacity Stokes Model 146G mechanical vacuum pump is mounted behind the vacuum chamber. The "package" includes all controls and instruments, including a Stokes high vacuum gauge.

The unit measures 63" high and occupies floor space of 24" left to right by 35" front to back. The vacuum pump, mounted behind the unit, measures 22½" high by 17" wide by 31¾" deep.

Freeze-drying—the process of drying a substance by sublimation of its water content as vapor directly from a solid state without passing through the liquid phase—is very useful for the preservation of extremely sensitive biological and other substances so that they retain their original characteristics over long periods of time during which these properties would otherwise be impaired or lost. Freeze drying retains all the potency and sterility of these substances, and there is minimum loss of volatile constituents. No oxidation or damage to the cell structure occurs, and the substance reconstitutes readily to its original state.

Blister Packaging Material

Packaging Industries of Montclair, N. J., has announced the development of a line of blister packaging machinery. The automatic machine, known as the Sentinel Blisto-matic Model, uses a preformed blister made of polyethylene, acetate, butyrate, vinyls, etc., automatically fills them, places a printed coated board on top, heat seals and automatically ejects them at speeds as high as 150 to 200 per minute.

Packaging Industries states that as many as six different blisters, each containing a different product, may be packaged at the same time. It is also reported that two different types of blister materials, each having its own heat sealing cycles; e.g. three blisters of acetate and three blisters of polyethylene, may be used at the same time, each containing a different product.

A semi-automatic unit is also available, suitable for low production, sampling and market testing. This unit may be acquired on a rental arrangement. Both units use the well-known Sentinel principle of heat sealing, having infinite adjustment to control temperature, pressure and dwell-time.

Packaging Industries further announces that shortly they will have attachments for these units to accommodate a film top rather than a cardboard top, and that a higher degree of automation will be possible by incorporating into it a vacuum former.

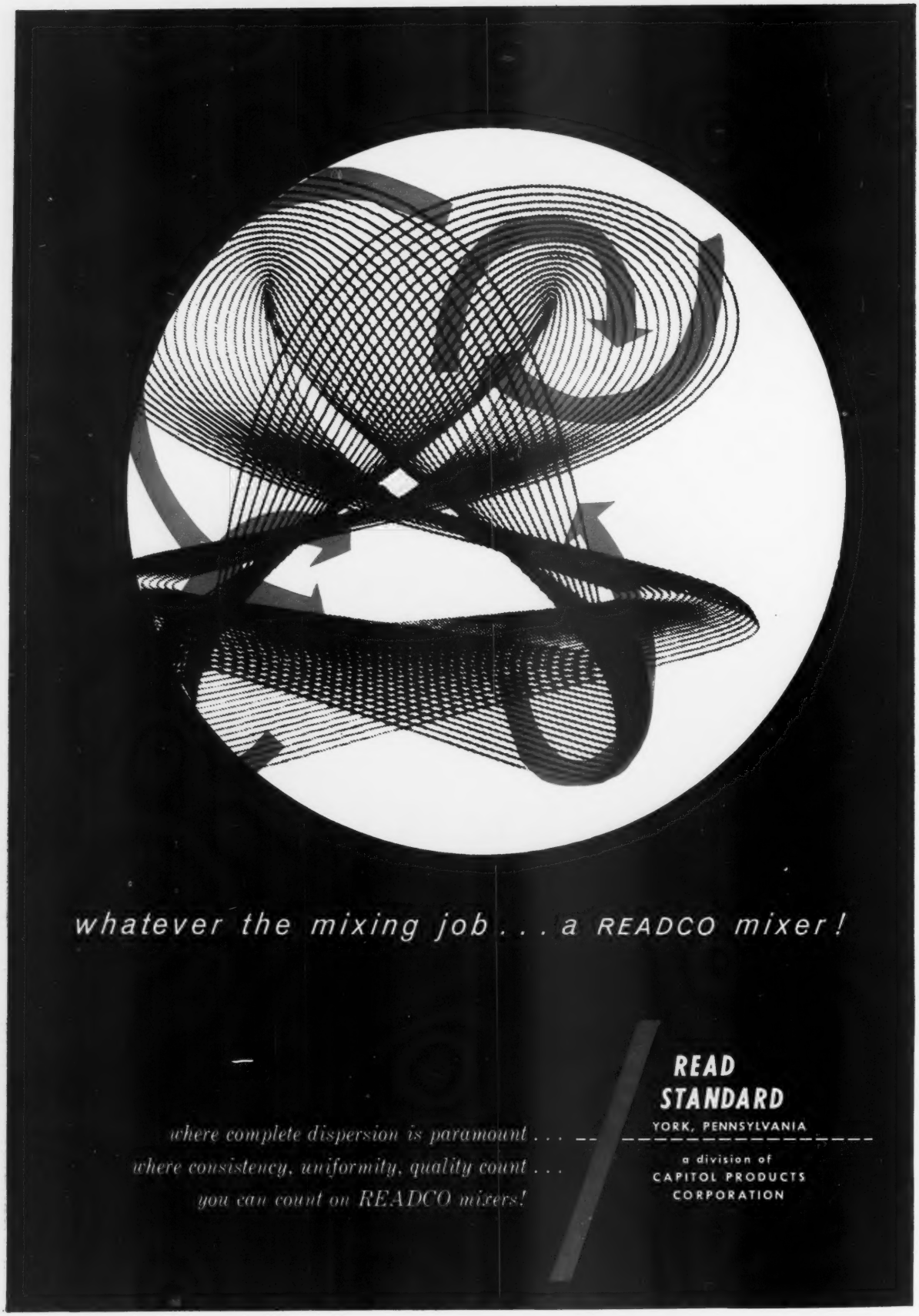
Schering Halves Processing Time

Concentration of heat-sensitive chemicals and pharmaceuticals at Schering Corporation now goes twice as fast, total production capacity is increased, and the processing operation is more flexible, as a result of the recent installation of a new No. 6 Turba-Film Processor to supplement the No. 4 Turba-Film unit installed originally in 1955. Evaporating capacity of the newer unit in terms of water is 5000 pounds per hour at 75mm. vacuum and 30 pounds psig; of the older unit, 1200 pounds per hour.

The two units, built be Rodney Hunt Machine Co., Orange, Mass., can be operated together on one job, either in tandem or separately, when really high production is needed, cutting processing time in half and increasing total capacity. Alternatively, the smaller unit can be used for small batch or pilot plant runs without interfering with the volume production being processed in the larger unit.

"Three of the features of the Turba-Film Processor are especially valuable in concentrating our high-purity chemicals and pharmaceuticals," say Herbert Kaplan and W. C. Eiff, Schering process engineers. "First is the ability to draw a vacuum, which permits solvents to be evaporated at lower temperatures which do not harm the end product. Second is the way it creates an extremely thin film of material in process, which permits rapid application of heat to every particle of the material. And the third is the rapid downward motion of the spiral-falling film, which restricts the application of heat to a very brief period of time."

Another feature of the Turba-Film Processor which


whatever the mixing job . . . a READCO mixer!
where complete dispersion is paramount . . .
where consistency, uniformity, quality count . . .
you can count on READCO mixers!
READ STANDARD
YORK, PENNSYLVANIA
a division of
CAPITOL PRODUCTS CORPORATION

Schering has found attractive in stepping up production is the speed with which the unit can be cleaned. Since it is constructed of stainless steel (Type 316), all that is necessary is to "process" a batch of hot water and the unit has cleaned itself. This feature permits the processing of as many as five or six different types of material daily without long and costly cleaning operations.

High Speed Colloidal Serum Mill

Precise control of fineness from one batch of serum to another is now possible with a high speed Eppenbach Colloidal Mill manufactured by Gifford-Wood Co., Hudson, N. Y., according to a recent announcement by the company.

Designed for handling materials in slurry form, the new serum mill macerates vaccines, viruses, serums and fibrous tissue such as chick embryos, animal and fish livers. Blending is accomplished by a four-way mixing action.

In operation, a slurry of tissue is placed in the mill's jacketed hopper. High speed cutting blades at the bottom of the hopper premacerate tissue, which then passes into the mill's homogenizing zone. Here the slurry passes through the teeth of a rotor and stator where it is mechanically sheared. This is followed by hydraulic shearing in the lower section of the zone.

Final refinement is given the material by a high speed discharge turbine. The refined material passes into an outlet pipe from which it is either drawn off or recirculated to the feed hopper. Material may be automatically recirculated any desired number of times until completely homogenized.

The degree of fineness is controlled by adjusting the clearance between the rotor and stator, which ranges from .0005" to .125". One of the key features of the Eppenbach serum mill is the calibrated index ring. Settings may be made on the ring so as to obtain identical results from one batch to the next.

Accurate temperature control is also assured by the complete jacketing of the hopper. This arrangement permits the user to run brine, cold water or alcohol through the jacket to prevent overheating; or to put through hot water or steam up to 40 psig. to keep the temperature of the sensitive organic tissues at required processing levels. Recirculating and outlet lines are not normally jacketed; but they may be, if specified.

The mill is designed to be easily disassembled for cleaning and servicing. Rotor and stator are stellited to hold wear to a minimum. Lateral displacement or change in the rotor-stator gap settings is prevented by precision ball bearings and an invar shaft.

All contact metals are of stainless steel and the hopper cover, with a 3" threaded and Neoprene gasketed cap for inserting product, has swing bolts for positive seal. It can be fitted with a dial-type thermometer for indicating temperature during processing and with a vacuum or positive pressure pump to permit evacuated operation. In addition, the hopper is furnished with ⅜" steam sterilizing valves.

The mill can be either chemically sterilized or inserted into a sterilizing autoclave by removing the mill proper from the motor support.

Belt drives are completely enclosed for safe operation and the cutting blades at the base of the hopper are mounted on separate shafts for easy removal. Standard equipment calls for 220/440 V, 3-phase 60 cycle drip-proof, totally enclosed, or explosion-proof motors.

The mill is available in two sizes. The smaller unit, VT-7-2-BS, has a turbine diameter of 2½" and a capacity with serum-type materials of up to 5 gallons per hour. It occupies 14" x 24" of floor space and stands 46" high. G-W reports that peripheral velocities in excess of 100 peripheral feet per second along the circumference of the rotor are possible.

The VT-9-BS with a capacity of up to 20 gallons per hour of fluid or semi-fluid slurry has a turbine diameter of 5", peripheral velocity of 153 feet per second and measures 48" x 18" and is 60" high.

Capacities depend on viscosity and specific gravity of product, gap setting for clearance between rotor and stator, and whether feed operation is by gravity or pressure.

Dumper

A portable lift dumper is offered by Essex Conveyors, Inc., Franklyn Ave., Nutley, N. J. It can be equipped to handle drums, boxes, tote bins, bags or barrels. The machine elevates the containers and tips them over. It is push button controlled.

Spiral Vibrating Dryer

I mentioned in a previous issue the possibility of using a vibrating spiral conveyor in a continuous dryer as a means of saving much of the floor space such dryers usually take. Carrier Corp., 21 N. Jackson St., Louisville, Ky., make an air dryer of this type which looks very good.

Mikro-Pulsaire

This is the name of a new micro dust collector put on the market by Mikro Pulverizing Machinery Division, 60 Chatham Rd., Summit N. J. 99.9 per cent efficiency is claimed. Bags or stocking are continuously cleaned by timed, momentary high velocity air jets which operate through specially designed venturis mounted above each stocking or filter cylinder. Sounds good.

Classifying Conveyor

Standard Conveyor Co., North St., St. Paul, Minnesota, have introduced a classifying conveyor which will sort out cases delivered to it by size, weight or color coding.

LATEST EDITION

Laboratory Data Sheet

VITAMIN A 'ROCHE'

Liquid vitamin A palmitate and acetate
Dry vitamin A acetate
Dry vitamin A and D_2

Roche has all popular types for your manufacturing needs

Summarized below for your convenience are facts about the many types of Roche vitamin A and vitamin A & D combinations which meet practically all pharmaceutical needs. Samples and technical literature are yours on request — without charge, of course. Ask your Roche salesman or write.

	Type & Name	Usage	Potency (in U.S.P. units per gram)	Additive	Stability	Mesh Size
LIQUID TYPES	**P1MO** Vitamin A palmitate *(liquid)*	In tablets, aqueous dispersions, capsulated products	1,000,000	Edible oil only, for standardization	Excellent	–
	P1MO/BHA Vitamin A palmitate *(liquid)*	as above	1,000,000	Edible oil plus antioxidant (butylated hydroxy-anisole). Note 1.	Excellent	–
	P1.3 Vitamin A palmitate *(liquid)*	For oil-free prepara-tions	1,350,000 to 1,450,000	None	Excellent	–
	A1MO Vitamin A acetate *(liquid)*	In oil solutions and gelatin capsules	1,000,000	Edible oil only, for standardization	Excellent	–
SPECIAL	Type P1.8 *(liquid)* Vitamin A palmitate	For research and special production	1,650,000 to 1,800,000	None	Needs special handling	–
	Type A2.9 *(crystalline)* Vitamin A acetate		2,800,000 to 2,900,000	None	Needs special handling	–
DRY TYPES	Type 325A-32.5D Vitamin A acetate & Vitamin D_2 *(dry)*	For tablets, capsules, vitamin-fortified powdered supplements	A—325,000 D_2—32,500	None	Excellent	40 and 60
	Type 325 Vitamin A *(dry)*		325,000	None	Excellent	40 and 60
	Type 500 *(dry)* Vitamin A acetate	For dry prepara-tions: tablets, capsules, vitamin-fortified powdered supplements	500,000	None	Excellent	40 and 60
	Type 500A-50D Vitamin A acetate & Vitamin D_2 *(dry)*		A—500,000 D_2—50,000	None	Excellent	40 and 60

Note 1 { Antioxidant added at 10 mg. per 1,000,000 units of vitamin A.

Packaging { All Roche vitamin A is packaged to insure safety in transit and ease of handling in pharmaceutical operations.

Vitamin Division

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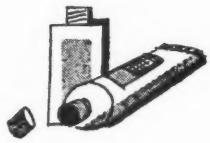
Reprints of these data in 8¾" x 11" size are available on request. These can be used in the new Roche loose-leaf catalog, or in any standard 3-ring binder.



Advancing Therapy

Essential Fatty Acids and Coronary Disease

Ancel Keys, in a study reported in *Geriatrics* for May 1957, concludes that there are very great differences between populations in the incidence of atherosclerosis and the mortality of coronary heart disease at given ages. These differences are not explained by race, nationality, or climate or any non-dietary factor so far studied.

The differences in the frequency of coronary heart disease appear to be closely correlated with the average serum cholesterol concentration in samples of the populations.

Both the serum cholesterol concentration and the frequency of ischemic heart disease are unrelated to the amount of protein in the diet, but there is a close correlation with the proportion of fats in the habitual diet.

In those population groups that have been studied, where the proportion of fats in the diet has changed, increased, or decreased, there has been a subsequent change in the frequency of ischemic heart disease, the time lag being of the order of a year or two.

The influence of dietary fat on the frequency of coronary heart disease probably operates through effects on both atherosclerosis and thrombosis. Different dietary fats differ in their effect on serum cholesterol and probably on atherosclerosis, for the common meat and dairy fats that predominate the American diet have a powerful tendency to raise the serum cholesterol level. Unsaturated and linoleic acid fats tend to reduce the serum cholesterol level. But fish oil is not particularly effective, and the action of the most effective of these fats, corn oil, is not fully explained in terms of fatty acid composition.

"The *addition* of corn oil or any other oil to the American diet, without reducing the ordinary fats in that diet, can have very little effect on the serum cholesterol level unless very large amounts are used, and this would mean an impossibly high calories intake.

"There is no reason to believe that the *addition* of corn oil, sunflower seed oil, safflower seed oil, or fish oils to our diets, without other diet changes, could prevent or control coronary heart disease.

"Lastly, it should be realized that we are far from knowing all the answers. We need a great deal more research. But I doubt that the day will come soon when we can load our blood with fat without affecting cholesterol and blood coagulability. I see no prospect of preventing coronary heart disease merely by taking pills or capsules or periodic swallows of corn oil."

Peripheral Vasodilator

Duvadilan, a proprietary preparation of 1-(p-hydroxyphenyl)-2-(1-methyl-2-phenoxyethylamino) propanol greatly increases peripheral circulation in the extremities without causing a lowering of blood pressure or a significant increase of pulse rate, according to K. Weghaupt (*Wein. klin. Wochschr.*, 69: 31, 1957). It has been used successfully in five patients and its administration may make amputation unnecessary.

Oral Contraceptive

Small doses of triethylenemelamine according to M. Bock and H. Jackson (*Brit. J. Pharmacol*, 12:1, 1957) had a selective action on the fertility of male rats. One dose produced effects ranging from subfertility to sterility during the next 3 weeks. In the fourth week sterility was the rule, but normal fertility was restored in the fifth week. A short course of the drug resulted in sterility lasting about 5 weeks, after which fertility was rapidly regained. Daily doses caused infertility in about a week which was maintained throughout treatment (7 weeks), and persisted for several weeks after the drug was discontinued. Sexual activity of infertile animals seemed normal and sperm production appeared to continue. Spermatozoa from infertile animals were able to reach and penetrate ova. The results suggest that TEM acts directly on the germinal epithelium.

Thyroid Hormone

A recently discovered thyroid hormone called sodium liothyronine works faster and more effectively than those presently used, Dr. Elmore M. Fields, Hempstead, N. Y., reported in the *Journal of the American Medical Association.*

In a trial on 100 children, the hormone produced none of the side effects noted with other thyroid gland substances and worked in illnesses where these other preparations were only partly effective.

The hormone was used to treat both hypothyroidism and metabolic insufficiency.

Both of the conditions are often satisfactorily treated with presently used hormones, but in some children they cause such side effects as headaches, increased irritability and abdominal pain.

In almost all those treated with liothyronine, there was a striking improvement in behavior, circulation and appetite. During the original three-month test period, bone growth in many increased as much as 200 per cent beyond that expected for normal children of the same ages, he said.

Fungistatic Estrogens

Twenty-four estrogens or related compounds were tested by L. E. Fox, W. R. Carroll and J. Glacy (*J. Am. Pharm. Assoc.*, 46:276, 1957) for fungistatic action *in vitro* against eight species of pathogenic fungi. None of the naturally occurring estrogens had fungistatic action. An extract of Spanish moss, *Tillandsia usneoides* L. which showed estrogenic action manifested no fungistatic action. The only derivatives of a

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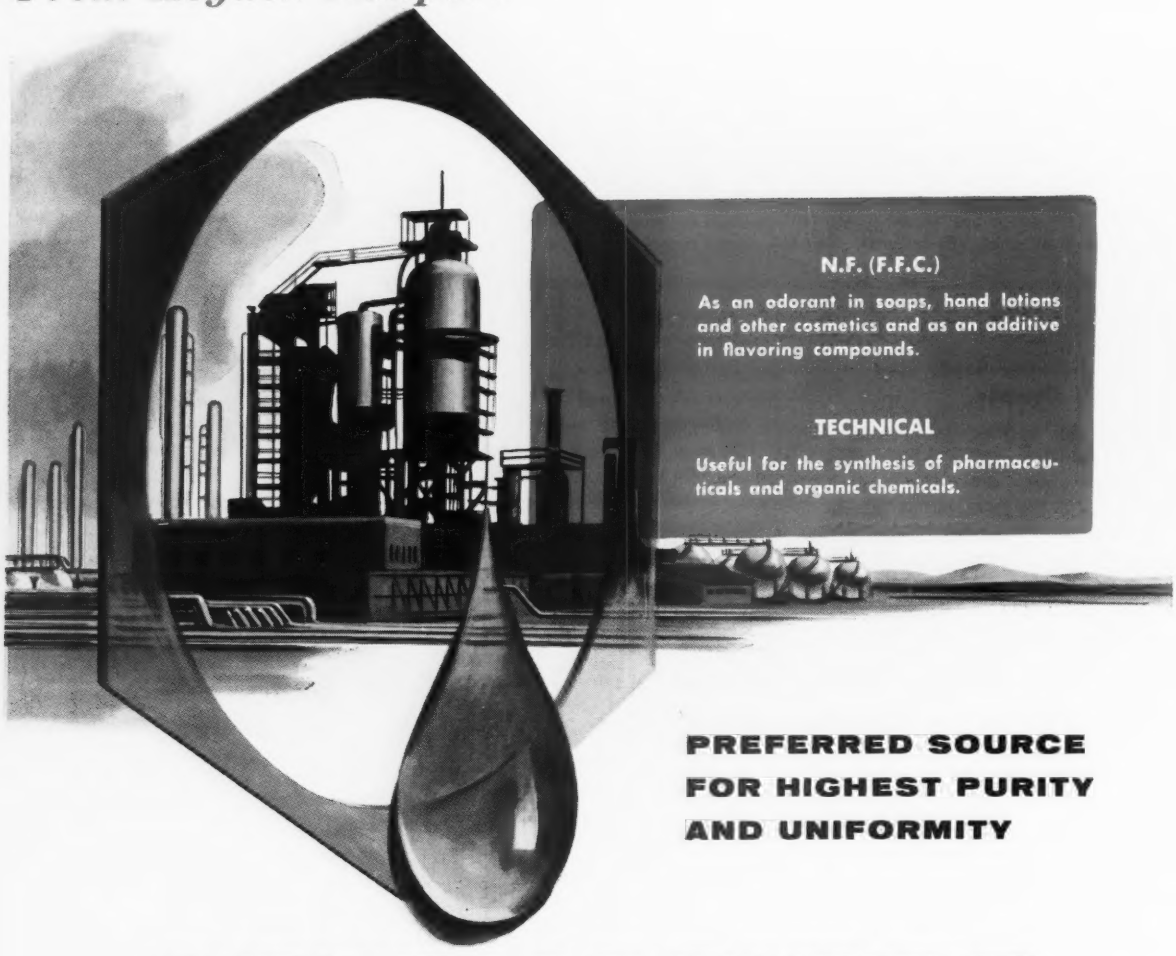
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natural estrogen which showed fungistatic action was ethinyl estradiol.

Diethylstilbestrol manifested greater fungistatic action than any other compound tested, except gentian violet.

Replacing the phenolic hydroxyl groups of the stilbestrol with methoxy groups decreased the activity, and saturating the double bonds in the ethylene portion of the molecule decreased the fungistatic action.

No correlations could be drawn between fungistatic and estrogenic actions. The compounds that were more soluble in water tended to possess stronger fungistatic action.

Burn Treatment Enzyme

An enzyme taken from the juice of a fig tree now speeds the treatment of burned skin. Named ficin, the enzyme literally dissolves away the damaged tissue and can completely clean a third-degree burn in three to five days, according to Dr. James F. Connell, director of burn research, St. Vincent's Hospital, New York.

It has been successfully used on over 300 burn patients during the last three years.

The enzyme is applied to the burned area either as a paste or solution. It works best on the most severe burns.

It does the job by dissolving the damaged skin protein and can debride a third-degree burn faster than a deep second-degree burn.

With only partially damaged tissue, the enzyme treatment takes up to 12 days.

Ficin is the best of 25 or 30 enzymes which have been tried experimentally in the past few years but scientists hope to find one which works even faster.

An ideal treatment would be an enzyme which could do the debridement, or removal of damaged skin, within 24 to 48 hours, leaving the burned area cleared of all damaged tissue and ready for grafting.

Another enzyme which may be able to do this has just passed its animal tests at Walter Reed Army Institute of Research, Washington, and will soon be tried on humans.

In guinea pigs, the enzyme does the job within 24 to 48 hours. If it works as well on humans, it may turn out to be close to the ideal burn treatment.

Technically known as *clostridium histolyticum*, the enzyme is harvested from a type of bacteria similar to those which cause gas gangrene. After 24 to 48 hours contact with the protein-dissolving enzyme, the damaged tissue can be gently wiped away and the area is ready for grafting.

But extensive trials are needed to see if the enzyme will be safe and effective for human burns. *Science News Letter*, July 20, 1957

Far East Influenza Vaccine

Pitman-Moore Company announced that it has received a contract for approximately one-half million cc's of the new Far East flu vaccine from the U. S. Government. The vaccine will be used to immunize members of the armed forces against the new strain of influenza which has swept the Far East, with some cases reported in the United States.

Pioneer in "embryonated egg" biological products and long-time producer of influenza virus vaccine, the company is in a position from the standpoint of facilities, plans, and personnel to enter into full scale production.

Once the vaccine is put into production it will take approximately 35 days to complete the lot. Test protocols and samples are then sent to the National Institute of Health for testing.

To make the vaccine, the influenza virus is injected into eggs containing chick embryos. Sealed, the eggs are permitted to incubate during which time the virus multiplies to a high concentration. The top of the shell is removed, the egg sac is broken and the fluid, containing the virus, is removed.

The fluid is then processed and refined into vaccine with the virus rendered incapable of causing disease but capable of creating immunity by the addition of formalin.

One cubic centimeter is considered one adult dose. The new vaccine is "monovalent," containing only one strain—the type "A" causing the current outbreaks in the Far East.

Intestinal Antisepsis

The most important period during which intestinal bacterial inhibition should be maintained according to E. J. Poth (*J.A.M.A.* 163: 1317, 1957) is the period of early healing, which coincides with the period when nothing can be taken orally. When an intestinal antiseptic is administered, the doses should not be spaced more than four hours apart, because the effective agent will be swept out of the small intestine. Unsustained suppression of bacterial growth favors the outgrowth of the resistant organisms. Because intestinal surroundings are ideal for the continued growth of bacteria, antibiotic agents must be maintained in unusually high concentrations.

Succinylsulfathiazole is the most suitable of the sulfonamides. None of the antibiotics alone is satisfactory, but the combinations of neomycin and phthalylsulfathiazole and neomycin and bacitracin most nearly approach the ideal intestinal antiseptic. The former combination is less expensive than the latter. Bacitracin may be used to advantage upon withdrawal of neomycin with phthalylsulfathiazole. If neomycin and bacitracin are used, the administration of bacitracin should be continued about three days longer than that of neomycin.

Mixtures of Antibiotics

According to H. F. Dowling, in a report to the A.M.A. Council on Drugs (*J.A.M.A.*, 164:44, 1957), the administration of combinations of antibiotics is indicated only in a few highly selected conditions. However, they have been advocated and used in other conditions in which they not only do no good but actually may be harmful. When combined therapy of antibiotics is indicated, the antibiotics are best given separately, except in the case of mixtures for local application to the skin.

Hexetidine in Vaginitis

Hexetidine, in the form of a vaginal gel was tested clinically in 155 cases of vaginitis. It was ineffective in 42 cases of trichomoniasis and in 30 of 34 cases of moniliasis. It was, however, effective in 83.5 per cent of the 79 patients infected with H. vaginalis, implicated as the major etiologic agent in so-called "nonspecific" bacterial vaginitis.

Donagel with Neomycin (Robins), for the control of diarrhea contains in each 30 cc.: neomycin base (as neomycin sulfate) 210 mg.; kaolin 90 gr.; pectin 2 gr.; dihydroxyaluminum aminoacetate 0.25 Gm.; hyoscyamine sulfate 0.1037 mg.; atropine sulfate 0.0194 mg.; hyoscine hydrobromide 0.0065 mg.; phenobarbital 0.25 gr. The preparation is packaged in 6 oz. bottles.

Achrostatin V (Lederle) is an antibiotic formulation for the control of potential monilial superinfections during long term tetracycline therapy. Each capsule contains a mixture of 250 mg. phosphate-buffered tetracycline and 250,000 units of nystatin. The product is packaged in bottles of 16 and 100.

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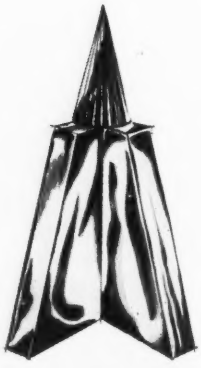

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Compounder's Corner

After-Shave Preparations

An after-shave lotion is usually nothing more than alcoholic astringent, but it can certainly be more than this; it should contain at least an acid buffering system and some means of skin conditioning. The first will assist the skin in returning to its normally slightly acid condition after the action of the alkaline soap and the skin conditioner can not only make the skin seem smoother but it will also soothe it after razor abrasion. It seems to us that menthol and perfumes are overdone in a number of popular shaving lotions. Menthol should be used in reduced amounts and floral and exotic odors could well be modified by the liberal use of witch hazel. Small amounts of a local anesthetic like benzocaine or saligenin might also prove of value, but proportions should be kept down to avoid excessive numbing action. A representative formula might be the following:

Alcohol	40.0
Aluminum chloride	1.0
Acetic acid	1.5
Sodium acetate	0.5
Soluble lanolin	2.0
Glycerine	3.5
Witch hazel	20.0
Perfume	0.25
Water	31.25

Plastic Film Nail Lacquer

Harrison Laboratories, a division of the Technical Tape Corporation is showing a plastic nail makeup which will shortly be put into national distribution, backed by an extensive advertising and promotion campaign.

The product is a thin, flexible colored plastic which is pressed on the nails and trimmed to fit and can be stripped off the nails at will. Adhesion for ten days, even with exposure to soap and detergents, and freedom from allergic reactions is claimed. The package contains backed pieces of different sizes, a piece of proper size is selected, the backing peeled off, and the film is pressed onto the nail. Light application of an emery board completes the application process. If adhesion and wearing qualities are as claimed, the new nail preparation will bear watching.

Hormones and Skin

Twenty-seven normal healthy adult male volunteers between the ages of 20 and 45 years were selected for this study by W. B. Shelley and H. J. Hurley, Jr. (*J. Invest. Dermatol.*, 28:155, 1957). 75 mgm. pellets of testosterone and 25 mgm. pellets of estradiol were implanted subcutaneously in axillary skin. Both treated and control (without pellet implantation) axillae were shaved at the beginning of the study, and were compared clinically for eccrine and apocrine sweating, and hair growth at weekly intervals for two months, then monthly, until sectioned for biopsy. Generous scalpel biopsies of both treated and control axillae were taken at this time. A total of 54 biopsies, each containing an average of 300 serial sections, were secured for study. In addition, in many instances, gross examination of this skin and its appendages with the stereoscopic microscope (2–20X) was utilized to detect possible over-all variation in the structures that might be obscure histologically.

On both treated and control sides the investigators were unable to detect significant variations in the quantity or quality of the eccrine, apocrine or sebaceous secretion, in the type or rate of axillary hair growth, or in the character of the axillary skin itself. Furthermore, visualization of gross specimens under stereoscopic magnification and histologic examination of the biopsy material failed to reveal appreciable differences in any of these structures from treated and control axillae.

A rather frequent finding, however, was the development of gynecomastia (enlarged breasts) in the subjects with estrogen implantation. All of the men with 75 mgm. estradiol implants, whether the opposite axilla was treated with testosterone or was left untreated, developed bilateral gynecomastia within three months. This phenomenon demonstrates that there was no failure of absorption of the hormonal substances from the implanted pellets.

Emphasis should be placed on the fact that in this study the hormone-containing pellet was actually in contact with many of the structures of the skin. Using the implant technic, the local concentration of the hormone in the skin was far higher than that which could be achieved by any systemic or topical dosage. The failure of these large "local doses" of estrogen and androgen to produce change in any of the adult skin structures, in the face of observable hormonal effects (gynecomastia), indicates that *elevations* of androgen or estrogen concentrations in the skin are without effect, despite the fact that these very substances may be responsible for the continued activity and normal function of this skin and its appendages.

Shampoos

Cloudy liquid shampoos based upon anion-active sulfate esters or sulfonates are improved by the use of behenic acid or a mixture of the acid and its amine salts as stabilizers. Pearly or milky shampoos will often separate into two layers; addition of behenic acid not only prevents this but it also produces desired cloudiness itself and the cloudiness is stable even as high as 45°C., the viscosity is unchanged and the acid has hair-conditioning action. Good results are obtained with the addition of one to five per cent of behenic acid and the shampoo is neutral or weakly acid.

Another solution to the same problem may be reached by using urea as a

phase stabilizer. As an example, the water soluble salts of sulfates of higher fatty acid monoglycerides are outstanding in their water-solubility and lather production, but lose clarity of standing, probably because of hydrolysis. Colgate-Palmolive solved this problem by the use of urea and maintaining pH between 5.5 and 7. As an example, a shampoo may consist of 25.0 per cent of the triethanolamine salt of the sulfate of coconut fatty acids monoglyceride, 10.0 per cent of urea, 0.5 per cent perfume, 10.0 per cent of alcohol and 54.5 per cent of water. The pH of the mixture is adjusted to 6.3 and there is no turbidity after 40 weeks.—*Kosm. Parf. Drog.* 4:44, 1957.

Ethylan

Ethylan, offered by Robinson Wagner Co., is a clear, golden yellow, oily liquid containing approximately 35 per cent by weight of pure, unreacted lanolin dissolved in a lanolin derivative vehicle. It is an effective emollient, plasticizer and lubricant, soluble in alcohols, fatty acid esters, mineral and vegetable oils. It may be used in creams, lotions, lipsticks and, because of its solubility in alcohol and compatibility with aerosol propellants, in aerosol cosmetics.

Sitosterol

Sitosterol, a steroid starting material for hormone synthesis, is now available in commercial quantities from General Mills Chemical Division in Kankakee, Illinois. Some suggested uses of sitosterol are indicated as synthesis of adrenal cortical hormones, sex hormones, hormonal drugs, and anti-cholesterol drugs. Other uses of sitosterols might include ointments, insecticides, lotions, cosmetics, pharmaceuticals and veterinary medicine.

Skin Pigmentation

Melanocytes are dendritic cells and always are distinctly different from malpighian cells. No intermediate forms were observed. The possible significance of variation in size and shape of melanocytes is discussed.

Melanin granules are found also in the malpighian cells of normal and various types of pathologic skin and can be identified in all layers of the epidermis by a variety of methods. Under certain pathological conditions, melanin may be found in large quantity in melanocytes, but little or none in the malpighian cells.

Melanocytes were identified by the dopa reaction and were counted in separated epidermal sheets of 63 surgical specimens of normal white and Negro skin from seven major regions of the body by R. J. Starrico and H. Pinkus (*J. Invest. Dermatol.*, 28:33, 1957). A mean of 1155 cells per square millimeter was determined, but individual counts ranged from 400 to 2784, and mean values for various regions from 754 on the abdomen to 1668 on the male genitals. Very dark epidermis did not contain more melanocytes than light skins. Results agreed well with those of other authors.

Acne Treatment

The majority of dermatologists have no standard efficient treatment for acne vulgaris, nor do the experiences of different dermatologists with any given treatment seem to be the same. For example, Kline says "vitamin A therapy is of special value in treatment of acne vulgaris" while Osbourn writes "vitamin A is without value in treatment of acne vulgaris". In 1954 three current journals carried articles mentioning, in all, about 45 preparations or procedures (including removal of tonsils) as having merit.

It is extremely desirable that we should be able to "cure" acne vulgaris. Osbourn described it as "the commonest disease process known to man." He said "it is estimated by competent authorities that at least 50 per cent of young people between the ages of 17 and 25 manifest some degree of acne vulgaris." Rothman suggest acne vulgaris is foremost among many pathological conditions that "never endanger but often ruin life."

There seems to be a considerable volume of opinion that the two principal causes of acne vulgaris are a hormone imbalance and bacterial infection. Cronk *et al.* speak of "the hormonal-bacterial etiology of acne" giving as references articles by Becker and O'Brien. Sullivan and Zeligman discussed the role of hormones and also of bacteria in causing acne vulgaris; and in discussing their paper Rothman gave a reasonable explanation of this dual aetiology when he said "when sebum stagnates inside the follicle its decomposition leads to formation of products which seem to be a good culture medium for bacteria."

Over a considerable number of years K. A. Baird (*Brit. J. Dermatol*, 69:86, 1957) has treated several hundreds of cases of acne vulgaris by a method which has given very close to 100 per cent clearing up of all cases. There seems to have been a minimum of scarring. This may be due to the fact that the treatment is essentially what one might call physiological, depending upon adequate treatment of the two causes of acne *at the same time.*

In brief, the treatment consists of altering the hormonal imbalance to a more normal state by the use of chorionic gonadotropin and raising the resistance of the patient's blood serum against bacterial infection by means of adequate doses of bacterial antigen-antibody.

In cases of long standing and in cases of only a few weeks' duration improvement is regularly shown soon after beginning the treatment.

In a number of cases where the treatment has been interrupted the improvement has ceased.

In the small number of cases where the acne has recurred the relapse has promptly receded with a small amount of further treatment.

The hormone treatment can be used alone very successfully to control those cases of oily or greasy skin or which have a tendency to develop sebaceous cysts, but where the bacterial element does not seem to be present and there are no inflammatory papules or pustules.

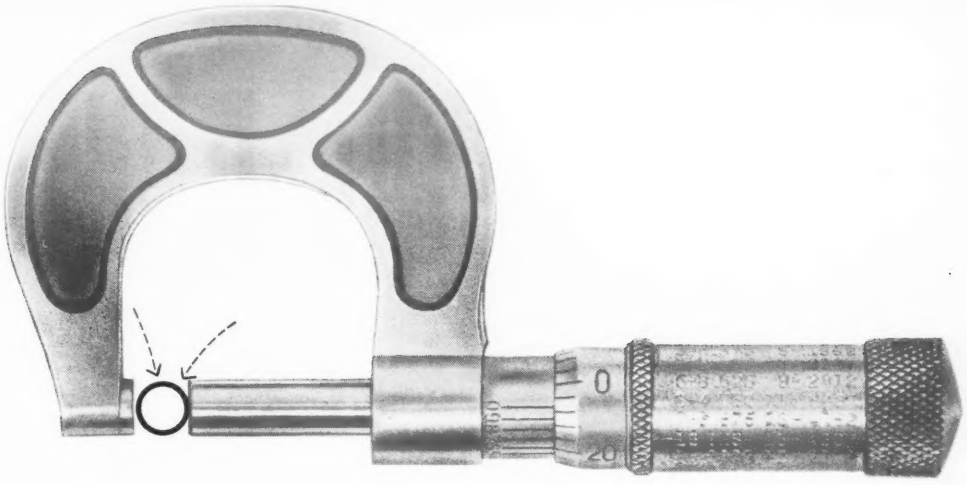
The vaccine therapy as described is extremely efficient in various non-acne pyodermas.

In acne, where both glandular and bacterial elements exist as causes, the use of either one of these treatments by itself will not result in improvement in a very large percentage of cases. They must be used together.

Pathibamate (Lederle) is a combination of anticholinergic and tranquilizer. Each pale yellow scored tablet contains 25 mg. of Pathilin tridihexethyl iodide and 400 mg. of meprobamate. The preparation is supplied in bottles of 100 and 1000.

Peganone (Abbott) is a new anticonvulsant of the hydantoin series. The product is available is 250 and 500 mg. tablets of Ethotoin in bottles of 100 and 1000.

Halotestin (Upjohn) is named generically fluoxymesterone and is claimed to be a more effective androgenic-anabolic steroid hormone than methyl testosterone. It is being made available in bottles of 100—2 mg. tablets and bottles of 50—5 mg. tablets.



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Menthanyl Acetate

Menthanyl acetate has a clean, fresh odor reminiscent of petitgrain and bergamot oils, and has excellent perfuming properties. It is a desirable base for compounding linalyl acetate replacements and for extending this product, as well as for preparing artificial oils of bergamot, lavender and petitgrain. These natural oils can also be advantageously extended with menthanyl acetate.

The application of menthanyl acetate in soap and detergent perfuming has proved successful. This product retained its freshness and odor throughout all stages of performance and covered the odor of the soap stock well. There were no signs of discoloration and, even after six months, the clean, fresh odor of menthanyl acetate remained strong in the soap cakes.

Menthanyl acetate was also evaluated as a petitgrain and bergamot oil extender. Petitgrain oil samples with additions of menthanyl acetate ranging from 10 per cent to 60 per cent were evaluated on smelling blotters and at 1 per cent in soap cakes. The new ester proved to be effective in this instance, in proportions up to 40 per cent.

Bergamot oil samples were also prepared containing from 20 per cent to 60 per cent of menthanyl acetate and the ester was found useful in concentrations up to 50 per cent although an optimum cut was found at 40 per cent.

Menthanyl acetate was also tested as a lavender oil extender and as a base for lavender compositions. It was found that the menthanyl acetate improved the natural oil by strengthening it and making its freshness persist over a longer period of time.

Tests have also indicated that menthanyl acetate is an excellent extender of linalyl acetate. Concentrations as high as 80 per cent of this product were found useful for this purpose.—*TheGivaudanian*

Clary Sage Oil

In a study by P. Teisseire and P. Bernard, reported in *Recherches*, for June 1957, the investigators started with clary sage oil they distilled themselves, so that the oil was of known purity. The crude oil, obtained by steam distillation, was then fractionally distilled under reduced pressure to separate it into a number of distinct fractions which were further investigated. Investigation of these fractions showed that the first distillates contained beta ocimene and myrcene along with a small amount of limonene. In the next fractions, the free alcohols consisted of linalool (a mixture of the levo-rotatory with the racemic), geraniol and nerol (the latter two in equal amounts) and d-alpha-terpineol. The esters present were almost entirely acetates: linalool, almost pure levorotatory, geraniol and nerol. A sesquiterpene that could not be fully characterized was strongly levorotatory and had a monocyclic structure with three double bonds of which two were conjugated and was accompanied by a small proportion of levo-cadinene. The heaviest fraction contained a little sclareol.

Odorizing

An announcement by Dow Chemical Company that methyl bromide containing chloropicrin as an odorizing agent will now be sold under the trade name "Profume" is a reminder that odorizing or reodorizing may have different meanings in different contexts. We are concerned primarily with the problem of making attractive-smelling and tasting preparations for consumers of toilet preparations, pharmaceuticals, foods and, increasingly, household preparations and articles. Nevertheless, large volumes of odorous substances are being used to repel rather than to attract. Effort, successful, has been put into making completely denatured alcohol unattractive; mercaptans are added to odorless household cooking gases to give warning in case of leaks; in the case of the Dow product, the odorless fumigant contains a potent tear gas to warn the unwary. It may thus be useful to be reminded that bad as well as good odors have their important uses.

Oleoresin Mace

Oleoresin Mace, now in production at the Clifton plant of Fritzsche Brothers, Inc., is described as a dark, reddish-brown homogeneous liquid manufactured from the finest quality mace and completely free from solvents. It contains from 50 to 60 cc. of volatile oil per 100 grams and has the clean, full flavor of the natural spice. When used in baked goods particularly, it demonstrates greater lasting quality than the oil. In the face of today's exceptionally high prices for oil nutmeg, the more economical and equally effective Oleoresin Mace should be especially interesting to users of the warm, spice-like nutmeg flavor.

Menthofuran

Mehthofuran is a substance secreted in the young parts of the plant, that is, where metabolism is most active. This explains according to J.A.J.M. Lemli, *J. Pharm. and Pharm.*, 9:113; 1957 the high content of the substance in flowers and stolons. The menthofuran content of basilic mint oil is 20 to 25 per cent and is of the same order as that from young plants and stolons of healthy plants which contain 12 to 28 per cent.

Basilic mint is peppermint infected with the parasite *Eriophyes menthae*, family Acaridae, which results in atrophy of the plant, suppression of flowering and the production of abundant terminal masses of numerous, small, appressed leaves. Hence, such diseased basilic shoots are young tissues from the chemical point of view. Thus the composition of oil of basilic

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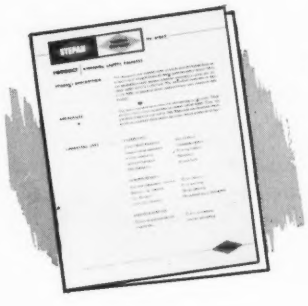
TRADE NAME	CHEMICAL DESCRIPTION	PHYSICAL FORM	ACTIVE	FREE FATTY ALCOHOL	CHLORIDE	SULFATE	pH 1% SOLN.	LBS./GAL. 30°C
Stepanol WA Paste	Sodium Lauryl Sulfate	Paste	28-30	1.5-3.0	1.4-1.8	1.4-1.8	7.5-8.5	8.67
Stepanol WAQ	Sodium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.3-0.8	1.4-1.8	7.5-8.5	8.67
Stepanol WA Special	Sodium Lauryl Sulfate	Clear viscous liquid	28-30	1.0-2.5	0.3-0.8	0.5-1.0	7.5-8.5	8.67
Stepanol ME Dry	Sodium Lauryl Sulfate	Powder	90-94	1.5-3.5	1.0-2.0	1.5-3.5	8.5-11.0	
Stepanol ME Dry AW	Sodium Lauryl Sulfate	Powder	90-95	0.5 Max.	1.0-2.0	1.5-3.5	8.0-10.5	
Stepanol WAT	TEA Lauryl Sulfate	Clear liquid	39.50-41.0	1.3-2.0	1.0-2.0	2.3-4.5	7.0-8.5	8.7
Stepanol DEA	DEA Lauryl Sulfate	Clear liquid	33.5-36.0	1.25-3.25	1.3-2.6	2.6-3.5	8.4-8.7	8.58
Stepanol AM	Ammonium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.5-2.0	1.5-2.0	5.5-6.5	8.53
Stepanol T-28	Special Sodium Lauryl Sulfate	Viscous liquid	35.5 Min.				9.0	8.6



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mint corresponds to that of young eaves and stolons of typical peppermint.

Menthofuran is thus shown to be secreted exclusively as a product of young tissues. Since this substance influences the quality of oil of peppermint and since its localization and formation are understood, it will be possible to employ this information in producing oils of finest quality.

Symphony of Scents

A new concept in the preparation of perfumes, designed to assist fragrance houses in blending new and original scents of their own, has been prepared by Standard Aromatics, Inc. of New York City and has been launched under the name of the Symphony of Scents.

This consists of six perfume oils, each of which is a finished fragrance in itself, yet so chosen and so blended that they can be united with complete harmony in any qualitative or quantitative combination without clash, as is usually the case with separate perfumes.

An infinite variety of new fragrances can be created according to Standard Aromatics. The Symphony was itself worked out in response to a long felt demand of perfume companies who were aware of what they were seeking in new fragrances but had neither the material nor the experience to create such fragrances themselves.

Unsaturated Aldehydes and Acetals

The preparation of a number of unsaturated aldehyde dimethyl acetals and their free aldehydes has been carried out by Paul Z. Bedoukian (*J.A.C.S.* 79: 889, 1957) for the unsaturated aldehydes C_7 to C_{12}. The purpose of the work was to determine the odor characteristics of these compounds, since the saturdated fatty aldehydes of this series play an important role in perfume compositions and are extensively used in perfumes, cosmetics and soaps.

The method of preparation was as follows: The saturated aldehyde was converted to the enol acetate and then brominated in carbon tetrachloride. The dibromoacetate so obtained could be converted in good yield to the dimethyl acetal of the bromoaldehyde by adding methanol to the brominated mixture. When the bromoaldehyde was boiled with potassium hydroxide in butanol, it gave the unsaturated acetal which could be converted to the free unsaturated aldehyde by acid hydrolysis.

The odor characteristics of the unsaturated aldehydes and their acetals were tested in 10 per cent and 2 per cent ethanol solutions as well as on the full-strength compounds. The odors are powerful but not in general of a quality pleasing to a perfumer. The lower members have grassy green odors which are novel in character and may prove useful in certain perfume compositions.

It is of interest that all of these 2-alkenals have been found to occur in nature, either in the free state in certain essential oils, or as the oxidation products of fats. Thus 2-heptenal has been found in fat oxidation products and 2-octenal in oxidation products of cottonseed oil; 2-nonenal is formed from the oxidative fission of the hydroperoxide of methyl oleate and in the essential of *Achasma walang* Val; 2-decenal also occurs in the oil of *Achasma walang* Val as well as in the essential oils of *Coriandrum sativum* and French Guinea sweet orange. 2-Undecenal has been identified in the decomposition product of the hydroperoxide of methyl oleate and 2-dodecenal in the essential oil of *Eryngium foetidum* L., French guinea sweet orange oil and the essential oil of *Achasma walang* Val.—*Manuf. Chem.*

New Specialties

Lactoscatone is a new aromatic lactone with the empirical formula $C_{14}H_{22}O_2$. It is a derivative of 1,1-dimethyloctaline and is one of a group of chemical compounds recently developed by Dragoco, Inc. It is nitrogen-free, with a fecal note reminiscent of skatol, and will not cause discoloration. The chemical compound has outstanding fixative power, in addition to its combination of animal and woody notes.

Iso-Bergamate, also being offered by Dragoco, is the ester of a new terpene alcohol with a fruity fragrance and woody background recalling terpeneless bergamot.

Tron-oto (Abbott) is a ready-to-use solution in ear-drop form containing Tronothane, a surface anesthetic, erythromycin and polymixin B. It is supplied in a 5 cc. bottle with dropper assembly.

Teoquil (Allen & Hanbury Ltd., London) is available as a gel and dusting powder for anti-fungal therapy including athlete's foot. The active ingredient is Teoquil—hexadecamethylene - 1:16-bis-(isoquinolinium chloride) -0.4 per cent in a quick-drying base for the gel and 0.2 per cent in a free-flowing diluent for the dusting powder.

Linodoxin (Pfizer) is an orange-flavored emulsion containing in each 15 cc. tablespoon 4.5 grams of linoleic acid as safflower oil, 5 mg. of pyridoxine hydrochloride, 20 mg. of mixed tocopherols as antioxidant, glycerin, polysorbate 80, sorbitan trioleate, calcium cyclamate, artificial flavoring, 0.10 per cent of sodium benzoate and 0.004 per cent of proply gallate. It is intended to provide unsaturated essential fatty acids to reduce elevated blood cholesterol levels and is supplied in one pint bottles.

Paracortol (Parke-Davis) is another brand of prednisolone. It is available in 2.5 mg. grooved tablets in bottles of 30 and 100 and in 5 mg. grooved tablets in bottles of 30 and 100.

Imferon (Lakeside) is an intramuscular iron preparation for the treatment of iron deficiency anemias. It is packaged as 4 - 2 cc. ampoules or 4 - 5 cc. ampoules.

Furadantin I.V. (Eaton) is a new dosage form of 0.6 per cent Furadantin dissolved in polyethylene glycol 300 and is supplied in 10 cc. ampoules containing 60 mg. of Furadantin. It is to be diluted before use with dextrose or saline.

Imferon (Lakeside) is an intramuscular iron preparation for the treatment of iron deficiency anemia when rapid hemoglobin response is important. It is an iron-dextran complex providing the equivalent of 50 mg. of elemental iron in each cc. The preparation is available as 2 cc. and 5 cc. ampoules in packages of 4 ampoules.

Sandostene Spacetabs (Sandoz) are 75 mg. prolonged action tablets of Sandostene (methylaminophenyl-thenyl-piperidine tartrate), a new rapid-acting antiallergic-antipruritic. It is supplied as bottles of 100 tablets.

Achromycin V Liquid (Lederle) contains 100 mg. of Achromycin V, tetracycline buffered with sodium metaphosphate, in each cc. or 20 drops. The orange-flavored drops provide a dosage form for infants and the preparation is available in 10 cc. plastic dropper bottles.

Sigmamycin I.V. (Pfizer) is a combination of tetracycline and oleandomycin buffered with ascorbic acid for intravenous administration. The 250 mg. vial contains 167 mg. of tetracycline and 83 mg. of oleandomycin; the 500 mg. vial contains 333 mg. tetracycline and 167 mg. oleandomycin.

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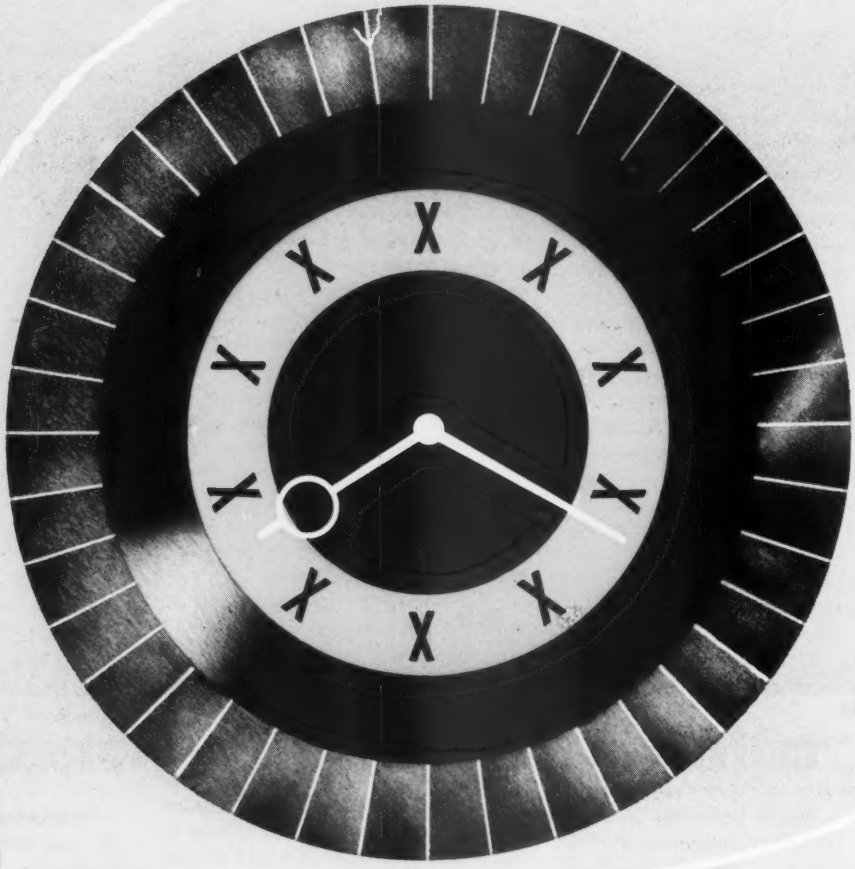

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Skin Research

Hypo-Allergenic Cosmetics

The 55 common skin irritants that are now being screened out, according to a recently begun advertising campaign, are listed in the company's literature and are reproduced below. We will forego comment.

Acacia	Oil of Bergamot
Alizarin	Oil of Cananga
Almond Oil	Oil of Cassia
Alum	Oil of Cotton Seed
Aluminum Acetate	Oil of Coriander
Aluminum Chloride	Oil of Eucalyptus
Aluminum Sulphate	Oil of Heliotropine
Arrow Root	Oil of Jasmine
Bay Oil	Oil of Lemon
Beeswax	Oil of Neroli
Benzaldehyde	Oil of Orange
Betanaphthol	Oil of Orris
Boric Acid	Oil of Spearmint
Carbolic Acid	Oil of Wintergreen
Cocoa Butter	Orris Root
Corn Starch	Oxalic Acid
Cresol	p-Phenylenediamine
Dibromfluorescein	Quince Seed
Formaldehyde	Resorcinol
Geraniol	Rice Starch
Gum Arabic	Salicylic Acid
Gum Karaya	Sulfonamide Resins
Gum Tragacanth	Wheat Starch
Henna	Wool Fat
Linseed Oil	Zinc Chloride
Lycopodium	Zinc Salicylate
Metallic Lakes of Aniline Dyes	Zinc Stearate
	Zinc Sulphate

Fungistatic Estrogens

Twenty-four estrogens or related compounds were tested by L. E. Fox, W. R. Carroll and J. Glacy (*J. Am. Pharm. Assoc.*, 46:276, 1957) for fungistatic action *in vitro* against eight species of pathogenic fungi. None of the naturally occurring estrogens had fungistatic action. An extract of Spanish moss, *Tillandsia usneoides* L. which showed estrogenic action manifested no fungistatic action. The only derivatives of a natural estrogen which showed fungistatic action was ethinyl estradiol.

Diethylstilbestrol manifested greater fungistatic action than any other compound tested, except gentian violet.

Replacing the phenolic hydroxyl groups of the stilbestrol with methoxy groups decreased the activity, and saturating the double bonds in the ethylene portion of the molecule decreased the fungistatic action.

No correlations could be drawn between fungistatic and estrogenic actions. The compounds that were more soluble in water tended to possess stronger fungistatic action.

Peganone (Abbott) is a new anticonvulsant of the hydantoin series. The product is available in 250 and 500 mg. tablets of Ethotoin in bottles of 100 and 1000.

The Society for Investigative Dermatology-Continued

The paper by *V. D. Newcomer et. al.* deal with the studies on the properdin and complement component levels in sera from patients having various systemic diseases.

Recent clinical observations and patch-test studies by *E. Sidi, M. Hincky* and *R. Longueville* have shown the existence of a cross-sensitization between neomycin and streptomycin. Neomycin is a compound with relatively little allergenic potency; the authors found only about ten cases of neomycin sensitivity per year in their clinic. However, they had recently found that allergic eczematous contact dermatitis due to neomycin also brought about sensitization to streptomycin. Further testing indicated that this cross-sensitization occurred not only following external application of the compounds but also after internal administration.

A series of patch tests were performed on normal skin by *W. A. Anderson, H. Shatin and O. Canizares* using relatively inert materials to which the subjects were not sensitized in an attempt to determine the effects of variation in pressure, shape and elasticity of the test substance on the patch test response. Significant variations in patch test responses were obtained with variations in pressure. In an effort to study the mechansim of allergic eczematous contact dermatitis, C^{14} labelled 2:4 dinitrochlorobenzene(DNCB) was chosen by *V. H. Witten and C. March* as the experimental allergen and the guinea pig as the experimental animal. A radioactively tagged allergen was used in this study with the thought that minute amounts probably could be traced with ease in the attempt to demonstrate any differences in the manner in which the specific allergen was handled by animals sensitized to the allergen when compared with control animals.

When two allergens of unequal sensitizing capacity are simultaneously applied or applied separately within a short time interval, the stronger one *may* block sensitization to the lesser one according to *W. L. Epstein and A. M. Kligman*. For example, it has been found that 2-4, dinitrocholorobenzene under specified circumstances will block sensitization to paranitrosodimethyl aniline. Another type of blocking phenomenon considered is that which occurs in allergic subjects when two unrelated contact allergens are simultaneously applied to the same site. The results of such patch tests are not simply additive.

The implication of a study by *A. A. Fisher and A. Pelzig* seems to be that strong sensitivity to paraphenylenediamine may persist for at least ten years unchanged. Repeated exposure to paraphenylenediamine in patients with weak sensitivities to this substance does not seem to increase their sensitivity. The pattern or "spectrum" of cross sensitivities seems to remain unchanged over the years.

During the course of studies by *F. Daniels, Jr. and J. D. Imbrie* on the effects of an agent (8-methoxypsoralen), which modifies responses to solar exposure, 60 human subjects were exposed to controlled durations of sunshine. The responses of these individuals by visual grading of erythema, pigmentation and trauma were observed. One step in the erythema rating scale consisted of barely perceptible erythema, and variation of this threshold response between difierent individuals can therefore be compared. Because of the inherent variability of threshold measurements, a response curve of decreased skin reflectance through standard tristimulus filters was proposed and discussed as a substitute for the erythemal threshold. Skin reflectance data were obtained through red filters and through amber, green and blue tristimulus filters.

Benzophenones represent a new class of ultraviolet light absorbing agents. They are currently being used industrially to prevent deterioration of paints, fabrics, plastics and other materials exposed to ultraviolet irradiation. These compounds are chemically stable and have an absorption spectra extending from the near to the far end of the ultraviolet spectrum. Experimental studies by *J. M. Knox, J. Guin* and *E. G. Cockerell* on the shaved abdomens of white albino rabbits revealed that 4-hydroxybenzophenone and 2,4-dihydroxybenzophenone were extremely effective in preventing the erythema that follows exposure to ultraviolet light produced by a standard Hanovia ultraviolet light machine. Further studies included a comparative evaluation of various benzophenones with paraaminobenzoic acid and tannic acid. These compounds were found to be more effective than paraaminobenzoic acid and tannic acid in preventing ultraviolet light erythema. Included in these experiments was a study of 24 commercial "sun-tan" and "sun-screening" preparations. 4-hydroxybenzophenone in an alcohol and silicone oil vehicle was chosen for use in clinical studies. Photosensitive individuals, fishermen and sunbathers were among those who used the lotion, although in many individuals it produced a burning sensation which was mild except in a few instances. No cases of allergic sensitization have developed. The most active compound tested was 3-benzoyl-4-hydroxy-6-methoxy-benzophenone.

With the qualitative a vitamin and nitrogen requirements as a background, a qualitative nutritional study of several strains of M. audouini, M. canis, and M. gypseum was undertaken by *E. S. Beresion* and *H. M. Robinson, Jr.* employing a uniform spore suspension of 0.25 cc throughout the experiments.

The effect of twenty-six amino acids on the growth and sporulation of six isolates of *Trichophylon rubrum* has been studied by incorporating the acids individually, at three different concentrations, as the sole nitrogen source on a mineral-base glucose medium solidified with purified agar. Partial or complete inhibition of growth was produced by each of eleven amino acids, of which methionine, norleucine and tryptophan were completely inhibitory at concentrations of 150, 50 and 4.4 μg. per ml., respectively. The use in culture media, of these amino acids found beneficail for either colony morphology or sproulation should eventually facilitate the mycological diagnosis of this fungous species, while those found to inhibit growth should be given clinical trial for the therapy of *T. rubrum* infections.

In view of the very simple growth requirements of dermatophytes, the question arises as to why they fail to invade tissues beyond the skin's water-electrolyte barrier. By growing T. mentagrophytes inside dialysis bags in human serum, *A. L. Lorincz, J. O. Priestly* and phytes inside dianalysis bags in human serum, *A. L. Loring, J. O. Priestly and P. H. Jacob* found that excellent growth occurred in sterile serum attowed to stand several days whereas growth was kept suppressed in the presence of serum that was not more than twenty-four hours old. This observation suggests that some relatively simple, dialyzable, water soluble unstable, antimycotic substance (a naturally produced antibiotic so to speak) occurs in serum and tissue fluids and is probably the chief basis upon which dermatophyte growth is kept restricted to the outside of the skin's water-electrolyte barrier.

The work by *W. D. Block et. al.* represents a study of nitrogen and sulfur metabolism in two males with active psoriasis. In the first psoriatic subject, urinary nitrogen excretion was essentially constant, accounting for more than 90 per cent of dietary nitrogen. This individual, therefore, remained essentially in nitrogen balance throughout the courde of the experiment. The second psoriatic patient studied also showed no nitrogen retention. In neither patient could any abnormalities in urinary sulfur partitions be demonstrated. The pattern of nitrogen and sulfur excretion obtained on the control subject closely paralleled the results obtained with the two psoriatics. The control subject also remained in nitrogen balance and showed no abnormalities in urinary sulfur excretion.

This is a continuation of previous studies on plasma protein changes in psoriasis. Changes in the electrophoretic patterns of plasma proteins were described by *F. Kalz et. al.* with particular reference to the effect of various forms of therapy. The major change observed was a marked reduction in the amount of beta lipo-proteins after ultraviolet therapy. This reduction occurred in all cases and amounted to at least 20 per cent to over 50 per cent and persisted for intervals which varied with different subjects.

Previous clinical investigations have led to the conclusions that mechanical trauma to the skin is most effective in eliciting the Koebner reaction if the superficial dermis is injured. To test this hypothesis, selective injury was applied by *R. P. Reinertson* to the superficial capillaries of the unaffected skin of patients with psoriasis until superficial petechiae were produced. In no patient did the Koebner reaction follow production of petechiae.

In 1953 Lobitz and Campbell reported on the occurrence of a paradoxical reaction in atopic subjects to locally injected solutions of acetycholine. They bescribed the appearance of the delayed dlanch phenomenon. This reaction was interpreted to represent vasoconstriction. It was found by *M. J. Davis and J. C. Lawler* that the capillaries remain dilated during and after the local application or injection of acetylcholine and there is continuous flow through the vessels in the areas that grossly look pale. The delayed appearence of the phenomenon and its occurrence about a wheal are also consistent with the impression that increased fluid in the tissues and not vasoconstriction of the small vessels is responsible for the blanching.

The report published by the National Academy of Sciences in June 1956, concerning the "Biologic Effects of Atomic Radiation," prompted *W. D. Stewart, V. H. Witten and M. B. Sulzberger* to initiate studies to ascertain the amount of ionizing radiation reaching the gonads of patients receiving routine therapeutic x-radiation for dermatologic disorders of other parts of the body.

Practical methods by which the amount of ionizing radiation reaching the gonads may be reduced without impairing the therapeutic value of the radiation were discussed.

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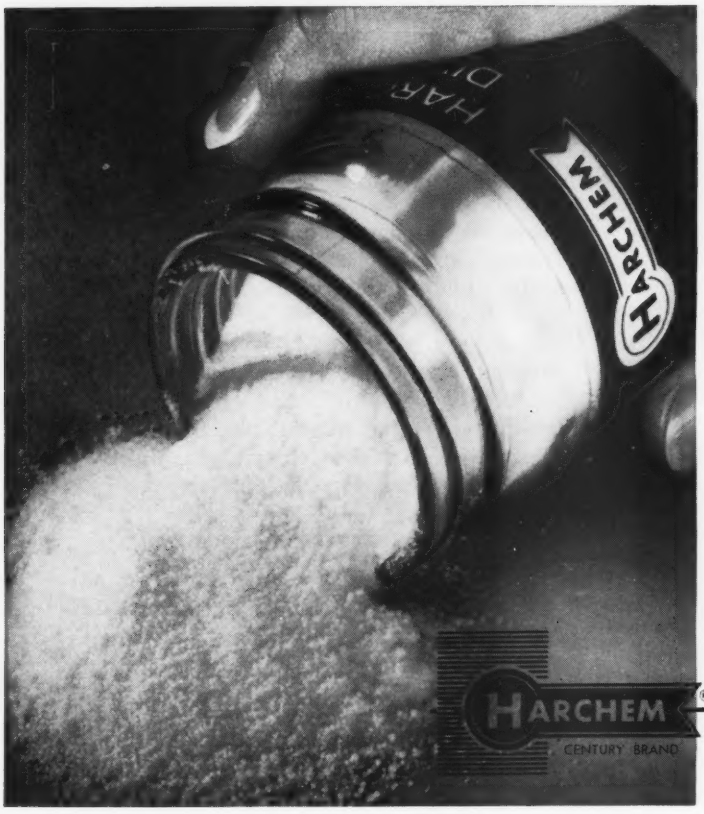

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Industry's Books . . .

Project Engineering of Process Plants, *by Howard F. Rase, Associate Professor of Chemical Engineering, The University of Texas, and M. H. Barrow, Project Engineer, Foster Wheeler Corp., with original illustrations by James R. Holmes, Assistant Professor of Drawing, The University of Texas, 692 pp., John Wiley & Sons, Inc., New York, (1957), cloth,* **$14.25**

This book is intended to formalize the methods of executing a project used by all progressive chemical companies and engineering firms. It is the first work devoted to process plant design which is written in accordance with modern techniques of project organization, planning and execution. The authors approach the subject from the point of view of the project engineer but any engineer whose work requires a knowledge of the theories and techniques of mechanical design, procurement, and construction will find it valuable. The book also includes a wealth of excellent illustrations of equipment and examples of actual design calculations, specifications, and contracts.

Correction 10507 Drug Gal-60

British Pharmaceutical Codex 1954—Supplement 1957, *published by direction of the Council of the Pharmaceutical Society of Great Britain, by The Pharmaceutical Press, London, (1957), 124 pp., cloth* **£1.17.6d, plus 1/ postage.**

The Supplement contains 44 new monographs in Part I. Monographs for 16 substances for which standards were specified in the British Pharmaceutical Codex 1954. The Supplement also includes amendments which have been published in the Pharmaceutical Journal since the British Pharmaceutical Codex was issued. Various other standards and monographs have either been added or changed in accordance with up-to-date usage.

The Microbial World, *by Roger Y. Stanier, Michael Doudoroff, and Edward A. Adelberg, University of California, 682 pp., Prentice-Hall, Inc., Englewood Cliffs, N. J., (1957), cloth,* **$8.00.**

This book is divided into three parts. Part I, "The Properties of Microorganisms," explains how microorganisms were discovered, how they are studied, and what they are. Part II, "The Ecology of Microorganisms," describes their distribution in nature, their influence on the living and nonliving environment of the earth's surface, and their exploitation by man for his own ends. Part III, deals with "The Biological Background." This work contains a wealth of line drawings and original illustrations, charts, tables, and footnotes.

Quality Control and Statistical Methods, *by Edward M. Schrock, American Radiator & Standard Sanitary Corp., Second Ed., 246 pp., Reinhold Publishing Corp., New York, (1957), cloth,* **$6.75**

This work conveys the operations of applying statistical methods to the problems of industrial quality control. This 2nd Ed. now covers the development of the quality control field, and the statistical and administrative problems connected with the organization of a quality control program. In addition, new material has been included on rapid approximate tests of significance, and analysis of variance. These chapters are especially useful to those primarily interested in statistical techniques.

FOAMING AGENTS IN COSMETICS

(Continued from page 165)

Hair Dressing Cream

(where the wetting agent increases the distribution on the hair.)

Glycerine monostearate	120
Cetyl alcohol	10
Isopropyl palmitate	10
Lanolin, anhydrous	10
Triethanolamine lauryl sulfate	15
Mineral oil	240
Water	595
	1000

The cosmetic effectiveness of emulsions in the form of a cream or liquid is based on their capacity to render the skin soft and supple. The oil-soluble constituents of these emulsions form a smooth, slippery film which makes the skin appear extremely smooth. The problem of dry skin is first tackled by the capacity of these emulsifiers to absorb and retain water. The softening power of a cream depends very much on whether and to what extent it possesses the capacity to preserve the water content of the skin.

The problem of dry skin lies in the outer layers of the skin (stratum corneum). This layer is composed of cells which have lost their nuclei, as a consequence of which they become callous. As long as these dead cell-layers remain soft and elastic they protect the skin-layers below them from desiccation. When this outer skin-layer becomes dry itself, deeper cracks may develop as a result of which the living cell-layer below may come into contact with the air, which in turn causes their drying due to loss of moisture.

Oils, waxes and fatty constituents in creams form a protective film on the skin. This film partially prevents the evaporation of water and thus keeps the skin soft and supple, protecting it from loss of elasticity. In dermatology, anhydrous fatty ointments for instance, are employed to protect the skin from loss of water. The humidifying cosmetic cream, however, must add water but must not act as a strong, isolating layer, as do the pure fatty ointments. As a basis for such creams for softening the skin by humidifying action the following emulsion, which contains sodium lauryl sulfate as a solubilizing emulsifier, has proved useful:

Mineral oil	200
Cetyl alcohol	30
Sodium lauryl sulfate	20
Water	750
	1000

In liquid emulsions, as for instance facial lotion, etc., addition of 1 to 1.5 per cent of sodium lauryl sulfate reduces the viscosity of these emulsions.

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remove fat from the skin to a much greater extent than do soaps. People react differently to the fat-removing process and it is advisable to improve the skin compatibility of these substances with superfatting agents. Isopropyl myristate is a good ingredient for this purpose. Isopropyl myristate is well absorbed by the skin and does not leave a greasy film. Additions of 0.5 to 1 per cent are sufficient. Isopropyl myristate dissolves to a clear solution in fatty alcohol sulfates. In other foaming agents a solution of isopropyl myristate in surface-active agents, e.g. Tween 80, is used in a ratio of 3 : 7, up to 3 per cent making a clear solution. Several other substances providing surface-protection to the skin, such as carboxymethyl celluloses, etc., improve the compatibility with the skin of these foaming agents in cosmetic products.

TABLET DISINTEGRATION WITH CELLULOSE

(Continued from page 167)

integration time, additional tests were run in the same manner but Simulated Gastric Fluid T.S.[10] was used in place of distilled water. The disintegration time reported is the average of 3 tests.

Discussion of Results

With the types of granulations tested, it was found that tablets containing purified cellulose gave faster disintegration than the tablets containing corn starch as a disintegrant. This was true in all but two situations, (Figs. 1, 4), where the comparison was made at 2 per cent concentration of starch and cellulose in lactose tablets when tested in water, and in calcium gluconate tablets when tested in simulated gastric fluid T.S.

A representative of both soluble and slightly soluble medicaments was selected because difference in the solubility of the ingredients is a factor in the disintegration rate of compressed tablets, as Firouzabadian and Huyck[8] observed their results.

The effect of simulated gastric fluid T.S. is more favorable than water with respect to disintegration time for both starch and cellulose when both soluble and insoluble type tablets were tested. (Tables I, II). This is contrary to the findings of Hoyle[2], who stated that the results of disintegration tests in simulated gastric fluid and water are essentially the same.

Starch, when used in the soluble and insoluble type tablets, showed an increase in disintegration time as the per cent of starch increased. This possibly is due to the ability of starch to pack more tightly when compressed in higher concentrations. Purified cellulose decreased the disintegration time as the concentration increased from 2 per cent to 5 per cent, and increased the time in concentrations from 5 per cent to 10 per cent. The best disintegration results of the formulations tested were obtained with cellulose at 5 per cent concentration.* A possible explanation is

the fibrous nature of cellulose, which with extremely long molecules has caused a lattice effect within the tablet in contrast to no lattice effect with the short branch-chained molecules of starch. This lattice arrangement would allow the solvent to enter the tablet more readily and cause a faster disintegration.

A type of binding property of purified cellulose was observed during the testing of hardness on the Strong-Cobb hardness tester. When the pressure on the tablet was great enough to break it, the tablet containing cellulose pulled apart from top to bottom in a ripping fashion, breaking into several large pieces. This phenomenon was not observed with tablets containing starch. At the breaking point, the tablet containing starch snapped into many small pieces. Again, the fibrous nature of cellulose may be the factor which contributes to its binding properties.

Conclusion and Summary

1. Purified cellulose at 5 per cent concentration gave faster disintegration than starch in ten out of twelve formulations tested.

2. Since the price of purified cellulose is nearly the same as starch, it may be profitable to consider employing it as a disintegrating agent.

3. Cellulose compared favorably with corn starch as a disintegrant in the formulations of tablets tested. Cellulose would be a ready substitute for starch when tablet compression difficulties are encountered concerning binding agents, lubricants, and disintegrants. It also could be useful in certain cases where faster disintegration is desired.

4. Tablets containing purified cellulose are white and appeared identical to those containing starch.

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GLYCERINE IN COSMETICS

(Continued from page 169)

reduce the growth rate of rats; dosages as high as 100 grams a day have been fed to human beings without causing gastrointestinal upsets. Since natural hydrolysis of edible fats during digestion liberates glycerine, these results are far from surprising.

On the skin surface, many pharmaceuticals intended for wound treatment contain substantial proportions of uncombined glycerine. Preparations containing large proportions of glycerine, including the hallowed glycerine and rose water for the hands, have long been used and irritation in general cannot be associated with the use of usual, moderate proportions of glycerine.

(Continued on page 242)

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Trade Literature

Butanol

Butanol is discussed in a new folder just released by Union Carbide Chemicals Company, Division of Union Carbide Corporation. The booklet presents data on physical and physiological properties, specifications, shipping information, solubilities, constant-boiling mixtures, and applications. Easy-to-read charts give physical properties of interest to users of butanol.

A plasticizer intermediate and a starting material for many chemicals, pharmaceuticals and dyestuffs, butanol is a diluent in hydraulic fluids; an extractant for vitamins, hormones, and antibiotics; and a mutual solvent for soluble oils.

Copies of this new data folder, F-7909, are available on request from Union Carbide Chemicals Company, 30 East 42nd Street, New York 17.

Polyethylene Glycols

A revised technical data bulletin on Mathieson Polyethylene Glycols has been issued by the Industrial Chemicals Division of Olin Mathieson Chemical Corporation, Baltimore 3. The bulletin gives use information, physical properties, specifications, and shipping data on three compounds: Poly-G 1000, Poly-G 1500, and Poly-G B1530. All are white waxy materials melting between 38 and 45 degrees C.

Fritzsche Operations

Fritzsche Brothers, Inc. is offering a brochure, entitled "Fritzsche Values," which is intended to introduce users of essential oils, aromatic chemicals, basic perfume and flavor raw materials to the manufacturing, control and service operations of the firm.

Isopropyl Myristate

Sole Chemical Corporation, 27 East Monroe Street, Chicago 3, has issued a new Technical Bulletin No. 757-1 describing its distilled isopropyl myristate. This non-greasy, oil-soluble solvent and spreading vehicle is particularly useful for aerosol, liquid, cream, and stick formulations of skin and hair preparations and also as an essential oil film spreader in bath oils.

Pharmaceutical Machines

A new catalog describing Colton pharmaceutical and chemistry industry machines and tools, and filling equipment is available from Arthur Colton Company, 3400 East Lafayette Ave., Detroit 7.

The file includes five catalog sheets on high-speed rotary tablet presses; eight catalog sheets on filling equipment including liquid fillers, tube fillers, power triturate machines and hard capsule fillers; and single catalog sheets on punches and dies, drying ovens, polishing stands, batch mixers, granulators, dust collectors and bottle conveyors.

Each sheet is profusely illustrated and gives complete specifications and application data.

Clinical Apparatus

New equipment for biochemical, clinical, medical and pharmaceutical laboratories is described in a 42-page bulletin of Fisher Scientific Company, 336 Fisher Building, Pittsburgh 19. The catalog contains apparatus recently developed by Fisher engineers to meet the specialized needs of clinical workers, as well as a representative selection of other manufacturers' appliances.

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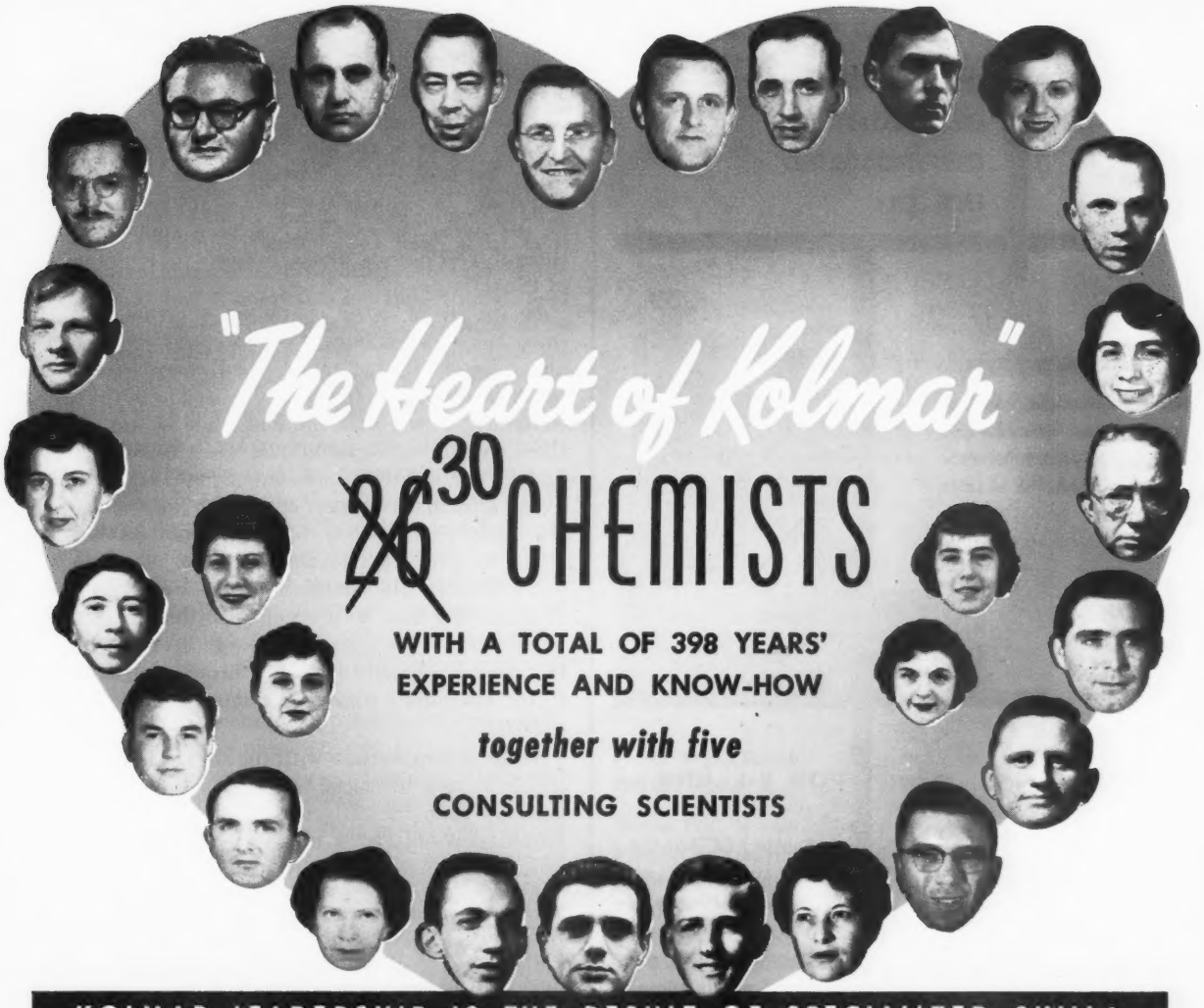

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(*Continued from page 239*)

A cosmetic preparation, superficially visualized as a solid, semi-solid or liquid in its container, should be considered over-all from three points of view: in its packaged form, as the film finally left after the preparation has been rubbed into the skin or onto the hair, and finally in terms of the effect of the residue or film on the surface to which it has been applied. In all three of these aspects, glycomic meets the requirements of the formulator.

In its jar or other container, a cream must be smooth, sweet-smelling, of proper consistency, texture and color, and must retain these characteristics, as much as possible, in the opened as well as in the closed container, during shelf life and while in use. Under these conditions, liquid creams must become neither unduly thin nor thick, nor show signs of separation.

On application to skin or hair, creams and liquid emulsions change their form, evaporation of their water content often leading to phase inversion and deposition of a film containing little or even no water. It is this film that must accomplish the intended cosmetic purpose, as a visible or as an invisible deposit. It must be easily and smoothly formed and, according to the intended purpose, be removed easily or resist removal.

While it is in contact with the skin or hair, the film should have a beneficial effect, physically or physiologically or both. Glycerine assists in all of these formulation objectives to an exceptional degree approximated by few other raw materials.

In cosmetic creams, pastes and cake preparations, glycerine is a universally applicable humectant to prevent loss of moisture by the product with consequent shrinkage, cracking and drying. This is strikingly the case in oil-in-water emulsion creams packaged in jars, such as foundation and vanishing creams, deodorant creams and brushless shaves which, especially in poorly sealed jars, will shrink away from the sides of the container, show surface cracks and in time become too hard to be used because of water loss. Again, retardation of loss of water (or alcohol) by glycerine prolongs the package life of cologne and deodorant sticks, while tooth pastes and lathers have creams require glycerine for the maintenance of their texture. Cake powders and cake make-up, ordinarily low in oil content, require glycerine as an humectant to prevent excessive shrinkage and powdering of the cake.

In semi-solid creams, glycerine increases viscosity or "body" to a maximum concentration of about 7.5 per cent (which may vary with the composition of the cream) beyond which the viscosity decreases. In liquid creams, the effect on viscosity seems to be more nearly additive, increasing progressively with the proportion of glycerine. Perhaps more important in liquid creams is the smoothing effect, glycerine often being able to eliminate slight lumpiness or stringiness sometimes caused by gum addition. Major changes

in the viscosity of liquid creams are usually brought about by changes in the composition of the emulsification system. In tooth pastes, glycerine permits preparation of a smooth and sweet paste which will not lose water too rapidly, but consistency, again, is more dependent upon the ratio of glycerine to precipitated chalk or other polishing agents rather than upon the actual amount of the excipient. When present in large proportions in liquid emulsions or lotions, glycerine is an effective anti-freeze, preventing breakage of the container at low transportation temperatures; more important, however, destruction of the emulsion by freezing may thus be prevented. This anti-freeze action is greater with larger proportions of glycerine, but exists even with small concentrations.

Toilet preparations containing volatile components —water or alcohol—undergo evaporation when applied to the skin and hair, and change character substantially. Glycerine in these circumstances functions as a high boiling lubricant and plasticizer. As oil-in-water creams, particularly those containing little oil, are rubbed onto the skin, the water evaporates until its concentration is very low and the emulsion either breaks or undergoes inversion to the water-in-oil type. Glycerine does not evaporate under these circumstances and functions as a lubricant and plasticizer, facilitating the phase change, keeping the mixture homogeneous and acting as a lubricant to prevent the stearic acid from rolling. This same type of action occurs in liquid creams as well as in the more nearly solid products, since both reduce, on an anhydrous basis, to films of similar composition. In deodorant sticks consisting of soap and alcohol, the soap residue left after the evaporation of the solvent is plasticized and prevented from rolling by the presence of glycerine. Liquid powder make-up preparation, with powders suspended in an aqueous vehicle, would dry to a non-adhering powder except for the presence of glycerine (and oil) which prevent the powder from flaking off the skin surface. Wave setting preparations consist of an aqueous solution of the gum along with alcohol and glycerine; the alcohol accelerates evaporation for quick drying. In the absence of glycerine, the residual gum film dries completely to a powder which flakes off of hair with the same effect as dandruff. Glycerine prevents this by retaining moisture and keeping the gum film flexible and non-powdery.

In aerosol wave set preparations, the PVP is itself so hygroscopic that glycerine must be used sparingly if at all. In such diverse products as cuticle removers, depilatory creams and pastes and face masks, glycerine again prevents complete drying of the residue and enables the active ingredient to remain in contact with skin or hair. In preparations which are not permitted to evaporate on the skin, glycerine keeps brushless and lather creams moist on the face and stabilizes the lather.

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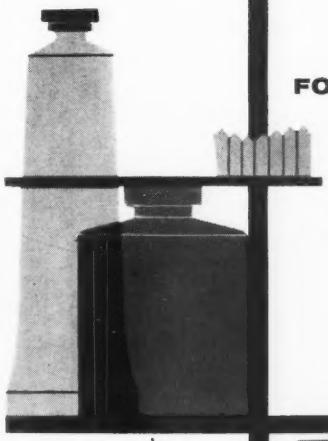

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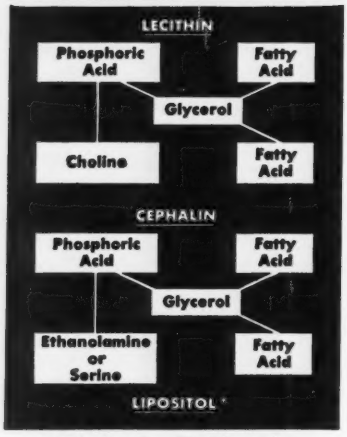

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surface, and it retains this property when mixed with other components of the residual film. It is an effective emollient and skin softener as in the traditional glycerine and rose water mixture. As an humectant it prevents evaporation of water, so that films containing glycerine always retain a certain proportion of water capable of humidifying the skin. Blank has suggested, furthermore, that a film of glycerine will aid the skin in attracting water from the environment and even under conditions of low relative humidity, glycerine tends to make the upermost layers of the skin more flexible than they would be in its absence.

DEODORANTS AND ANTIPERSPIRANTS

(Continued form page 178)

spirants and deodorants. An early German patent issued to Weiss[35] describes an antiperspirant powder containing zirconium oxide, hydroxide, hydrosulfate or hydrocarbonate, either alone or in combination with other common powder ingredients. A patent granted to Van Mater[36] covers products obtained by reacting inorganic zirconium salts with hydroxyaliphatic acids, followed by neutralization with alkalies, alkaline earths, ammonia or amino compounds to render the organic zirconium salts water soluble. Thus the insoluble zirconium lactate becomes water soluble when treated with sodium hydroxide. The use of zirconium oxychloride as an ingredient of antiperspirants is the subject of a recent paper by Helton, Daley and Ervin.[37]

Antibacterial and Deodorant Action of Antiperspirants

The microbial flora of the normal skin has been considered in a recent paper by Evans, Smith, Johnston and Giblett.[38] According to Killian and Panzarella,[13] *Micrococcus pyogenes* var. *aureus* and *albus*, also possibly a not well-identified gram-positive bacillus appear to be primarily involved in the production of the malodor of perspiration.

Shelley, Hurley and Nichols[12] identified the following microorganisms routinely from swabbings of the axillae of healthy men: *Micrococcus pyogenes* var. *aureus* and *albus*, *Corynebacteria*, *Aerobacter aerogenes* and *Sarcina lutea*. It does not seem to have been established which of these are particularly associated with the production of perspiratory malodor. It is assumed, moreover, that individual variations in axillary odor may reflect chemical differences in the composition of apocrine sweat, or differences in the bacteriologic flora, or both.

Information as to the frequency of occurrence of different types of microorganisms in the axillary fossae, based upon an examination of fifty men and fifty women, has been obtained by Meyer-Rohn and Schultz[40], as given in the following table:

Bacterial Flora of the Axillary Fossae

Microorganism	*Frequency of occurrence in*	
	50 Men	*50 Women*
Micrococcus pyog. var. albus	43	36
Micrococcus pyog. var. albus, hemol.	37	24
Micrococcus pyog. var. aureus	6	8
Micrococcus pyog. var. aureus, hemol.	11	11
Micrococcus eitreus	3	3
Streptococcus pyog., hemol.	–	1
Streptococcus, non-hemol.	22	16
Streptococcus faecalis	2	2
Sarcinae	4	6
Corynebact. pseudodiphth.	3	2
Escherichia coli	4	5
Proteus vulgaris	3	2
Pseudomonas aeruginosa	5	3
Klebsiellae	6	5
Spore forming bacteria	7	8
Unidentified	4	2

No clinical investigation appears to have been carried out with the view to ascertaining the participation of either the transient or the resident bacterial skin flora in the causation of perspiratory malodor. Since simple mechanical cleansing of the axillary fossae is not effective in suppressing the tendency to the development of malodor for any appreciable period of time, the conclusion is justified that the resident flora plays the major role here. It is of possible interest, therefore, that, according to Lowell,[39] resident bacteria, particularly staphylococci, are located so deep in hair follicles and in the sebaceous glands that they cannot be removed by mechanical means without injuring the skin; they do not occur in the sweat glands under normal conditions.

Several earlier papers deal with the growth of *Micrococcus pyogenes* var. *aureus* at low pH levels. This microorganism does not grow at a pH under 4.9 according to Bonacorsi;[41] for both the *aureus* and the *albus* variants, the lower limit of pH is 5.6, according to Dernby.[42] More recently, Pillsbury and Rebell[43] have found that the growth of normal skin micrococci in buffered brain heart infusion was slow or absent at a pH of 4.5, although the cells were not deprived of their viability, as shown by subsequent subculturing in more favorable media; however, viability was lost at a pH of 3.7. Incidentally, as a group, normal skin micrococci isolated from glabrous skin grew well at a pH of 6, while coagulase-positive staphylococci (*aureus* and *albus*), normal skin diphtheroids and gram-negative rods grew well at pH 5 to 7.

Thus, it is evident that an antiperspirant preparation based upon a hydrolyzing metal salt which develops a markedly low pH, should display an inhibitory action upon skin bacteria by virtue of this acidity, i.e., in the absence of any special bacteriostatic agent.

(Continued on page 246)

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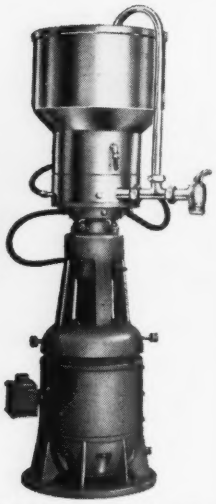

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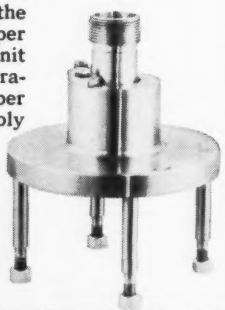

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There is also direct evidence that such preparations bring about a reduction of the bacterial count on the skin. Meyer and Vischer[44] observed the antibacterial action upon the cutaneous flora of potassium alum, while Shelley, Hurley and Nichols[12] showed that hair specimens clipped from axillae treated previously with an aluminum chloride solution tended to be substantially (if not entirely) free from bacteria, in contrast to hair removed from the control axillae which produced luxuriant bacterial growth on nutrient agar plates. Relevant to this matter is also the observation reported by Killian[13] that the addition of aluminum sulfate to stale specimens of collected perspiration reduced its bacterial count as well as its odor in a short period of time. The latter phenomenon is associated, incidentally, with the lowered pH level effecting a fixation of the volatile bases, including ammonia, by the acid resulting from the hydrolysis of the aluminum salt; at the same time, there is, of course, no reduction in the content of the free, volatile fatty acids, and, hence, no complete abolition of malodor due to the latter factor.

Blank, Moreland and Dawes (44a) reported recently that aqueous solutions of aluminum salts were bactericidal *in vitro* for certain microorganisms such as micrococci and diphtheroids, but comparatively ineffective against coliform bacilli. A 0.5 per cent solution of aluminum chlorhydroxide appeared to be bactericidal on the cutaneous surface, under the conditions of the (modified) Price technique, being more effective in this respect than the corresponding chloride or sulfate. On the other hand, no major difference was observed in the bacteriostatic effectiveness of the three salts on hydrated callus, nor in their capacity to reduce bacterial counts in the axillary area.

In an unpublished experiment conducted in our laboratory, it was found that a single application of an antiperspirant cream based upon aluminum sulfate (buffered with aluminum hydroxide) brought about a reduction of the total bacterial count in the axilla of over 95 per cent, the lowest count being reached about sixteen hours after the application; after forty hours the count was still less than 50 per cent of the normal.

Incidentally, Fredell and Read (44b) are persuaded that the output of axillary perspiration, its odor intensity, and the bacterial counts involved are not necessarily interrelated. They noted several instances of low odor levels associated with high bacterial counts; they observed also cases of a slight perspiratory output with its odor discernible most of the time, as well as cases of copious perspiration with a low incidence of odor.

Whereas most antiperspirants are also deodorant in action, some deodorants may have an antiperspirant effect. The latter is true of quaternary ammonium compounds such as benzalkonium chloride and cetyl pyridinium chloride which, therefore,

combine a bacteriostatic and, consequently, a deodorant effect with inhibition of eccrine sweat delivery to the skin surface. This effect is associated with an electrophysiologic potential along the sweat duct, as postulated by Sulzberger, Herrmann, Keller and Pisha;[46] the cationic, i.e., electropositive character of a substance like benzalkonium chloride is responsible for the inhibition of sweating.

Deodorants (Without Antiperspirant Action)

It appears from the foregoing that, in so far as control of perspiration odors is essentially a matter of controlling the activity of certain skin bacteria, the topical application of suitable antiseptics, particularly to the primary areas of odor-forming secretion, such as the axillary fossae, should reduce or suppress such odors by reducing or suppressing bacterial proliferation and biological activity. While, theoretically speaking, different antibacterial agents might be suitable for the purpose under consideration, two have received particular attention in modern deodorant formulations, viz., hexachlorophene, i.e., 2,2'-methylenebis (3,4,6-trichlorophenol), and bithionol, i.e., 2,2'-thiobis (4,6-dichlorophenol).

The outstanding quality of these bis-phenols which is at the basis of their deodorant performance is their property of being retained by the skin. Fahlberg, Swan and Seastone[47] found that the presence on the skin of hexachlorophene could be demonstrated two days after three consecutive daily six-minute washes with a *liquid* soap containing 1 per cent of this chemical. With 2 per cent of it in a *solid* soap, however, recoverable hexachlorophene was reduced tenfold; this apparent discrepancy was attributed to the larger amount of it coming in contact with the skin when present in liquid soap. Working with a C^{14}-labeled hexachlorophene, Shemano and Nickerson[48] showed that, as a result of washing depilated skin areas on the back of rats with a soap solution containing 2 per cent of it, an accumulation on the skin occurred as a result of the first three to four washes; hereafter, the quantity remained fairly constant. Significant radioactivity was present for four days after the last application; its rate of loss was increased by daily washing with soap and water. Similar results were obtained with the human skin.

In his comprehensive paper, Killian[45] refers to tests with perspiration sampled from the subjects' axillae in the course of thermal stimulation of sweating. While either plain soap or hexachlorophene soap in the tub bath produced a decrease in perspiratory odor, the latter soap was more effective, as shown, e.g., by the finding that the reduction of odor intensity after 11 daily baths with plain soap was approximately equivalent to that after four baths with hexachlorophene soap. As to the effect upon the total bacterial count of the skin, during the first four days of the test period there was no significant change in the number of bacteria in the samples of perspiration collected four hours after bathing with plain soap

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although a progressive decrease was observed subsequently; by contrast, quick and substantial reductions were noted following baths with the hexachlorophene soap. Discontinuance of the baths with either soap was followed by increments in the odor-producing potential of the perspiration, coincident with an increase in the bacterial population.

These findings are in substantial agreement with those of Gee and Seidenberg[49] who employed a "use" type of procedure and determined the relative efficacy of soaps in reducing the intensity of perspiratory odors by direct sniffing.

Shelley, Hurley and Nichols[12] reported that hexachlorophene prevents apocrine sweat *in vitro* from developing odor. The same authors observed that daily washing of an axilla for one week with a commercial detergent preparation containing hexachlorophene gave significant odor protection as compared with the control axilla in which the detergent without hexachlorophene was used. Moreover, hairs clipped from treated axillae were found to be free from bacteria (upon plating and incubation) in a substantially greater number of cases, than hairs from control axillae.

Gump[50] reported upon a series of experiments designed specifically to demonstrate the deodorant effect of hexachlorophene when incorporated in a body powder (in a proportion of 0.5 per cent), and in a deodorant stick. With the aid of the technique described by Pillsbury and Nichols,[51] it was found that the reduction of the bacterial population in the test subjects' axillae ranged from 95 to over 99 per cent following application twice a day. While this effect was achieved almost immediately, it was abolished within seventy-two hours after discontinuing the use of the two formulations tested. The findings as to the decrease of axillary odor and its restoration to pre-test intensity parallel those made with respect to the bacterial flora.

One of the preferred forms for using hexachlorophene as a deodorant is that of the so-called "deodorant stick" or "stick deodorant". Below is a typical formula, with a base of "solidified" alcohol, (sodium stearate serving as the solidifying component):

Sodium stearate	8.00 per cent
Sorbitol	5.00
Hexachlorophene	0.25
Alcohol	75.00
Water	10.00
Perfume	1.75

Of course, deodorants may be prepared in the form of creams, lotions, powders, also aerosol sprays, by incorporating suitable antibacterial agents in the proper excipient.

Moreover, typical antiperspirant agents (such as hydrolyzing aluminum salts) may be combined with bacteriostatic chemicals, for reasons of greater efficacy. This principle has been applied in the case of several preparations available on the market.

A chemical which has gained prominence in the more recent past as a degerming and a deodorant agent, is tetramethylthiuram disulfide or TMTD for short. Its formula is $(CH_3)_2N.CS.S\text{-}S.CS.N\ (CH_3)_2$. By itself, it has a strongly inhibitory effect upon pathogenic bacteria and fungi, as shown by Miller and Elson.[52] Incorporated in soap TMTD compared favorably with hexachlorophate and bi-thionol in its capacity to reduce the cutaneous flora; in fact, it was superior to either, as claimed by Vinson;[53] as to the deodorant action in the axillary area, it was found that even a single wash with TMTD—soap yielded a significant improvement which remained in evidence for two days, in the majority of the test cases.

Additional information on TMTD-soap has been supplied by Baer and Rosenthal[54] who observed a very substantial reduction of both the transient and the resident bacterial flora on the hands, after one week's use of it; they attribute a better degerming capacity to a 1 per cent TMTD-soap than to a 2 per cent hexachlorophene soap. No olfactory tests were conducted by Baer and Rosenthal on its deodorant effect.

Antibiotics

The utilization of antibiotics represents a recent development in the field of deodorant preparations. One such product contains tyrothricin as active ingredient which is claimed to have a prolonged controlling action upon odor-causing bacteria. While no clinical data appear to have been published on the deodorant performance of tyrothricin, Ferguson[55] reported upon the suppression of axillary odor by means of chlortetracycline (applied in the form of a 3 per cent ointment): also on the successful application of neomycin, for the same purpose.

For obvious reasons, Ferguson cautions against the use in deodorants of antibiotics with high indices of sensitization, as well as of those which are commonly administered systemically, even if they should prove effective in eliminating axillary odor.

A similar position is held by Shelley and Cahn[56]; although repeated application of a neomycin cream or lotion (containing 3.5 milligram of neomycin per gram of base) was found to inhibit axillary odor, the use of an antibiotic for this purpose is deemed to provide but an alternative clinical expedient to be applied in the case of those individuals who exhibit an intolerance for deodorants deriving their effectiveness from aluminum compounds.

Chlorophyll

Although chlorophyll, as a deodorant, commanded considerable attention in the recent past, its present position in this picture is one of lesser significance.

In contrast to other deodorants, a unique claim has been advanced originally for chlorophyll, or rather for one of its derivatives, to the effect that its oral ingestion would reduce or eliminate body odor.[57,58] In view of what is known about the

genesis of axillary odor, such a claim would imply the absorption from the gastro-intestinal tract of this chlorophyll derivative, and its subsequent distribution through circulation in such a manner as to permit it, or an active conversion product, to reach skin areas where it would inhibit bacterial activity or neutralize the odor due to it.

This concept is difficult to visualize in the case of substance such as chlorophyll or chlorophyllin. However, beyond this difficulty, there is the controversial matter of its verification. Killian[45] reports that the daily ingestion of chlorophyllin failed to prevent the development of malodor in samples of axillary perspiration; the findings of Shelley, Hurley and Nichols[12] were also negative, as were those of Brocklehurst[59] and Hopf.[16]

Where there is an opportunity for the direct contact with odorous material, deodorant action is in evidence.[45] Thus the addition to stale perspiration specimens of water-soluble chlorophyllins brought about deodorization as well as reduction of bacterial counts. It is of interest, although not with direct reference to the subject of this presentation, that chlorophyllins reduce the intensity of malodors originating in purulent infections and in certain other pathological processes.[60,61]

As to the mechanism of this direct deodorant action of chlorophyll or rather of its derivatives, Mitchell[62] attributes the effect to oxidation, having observed that chlorophyllin oxidizes benzyl mercaptan to dibenzyl sulfide, or methyl mercaptan to dimethyl sulfide. These experiments are in agreement with Killian's who found that dried chlorophyllin reduced the odor intensity of diallyl sulfide and of an aqueous garlic extract, and that sodium copper chlorophyllin deodorized benzyl mercaptan, provided that the pH level was 8 or over. However, Mitchell rejects the possibility of dedorization by chlorophyllin for other chemical categories.

The mechanism of odor reduction by chlorophyllin is also the subject of an inquiry by Hainer.[63] In contrast to Mitchell, Hainer presents evidence that chlorophyllin, acting as a colloidal polyelectrolyte, is capable of binding "odorants" by physical adsorption and also by chemisorption of polar molecules.

None of these data are held to have any direct bearing upon the primary function of cosmetic deodorants in suppressing the activity of odor-forming bacteria. They are given here merely in view of some claims and representations of questionable relevance, made on behalf of certain deodorant preparations, viz., that they must be particularly effective since they suppress the odors of garlic or onion on the skin.

As to the practical application of chlorophyllin, Barail[64] maintains that, in order to be effective, the concentration of the active ingredient would have to be so high as to stain the skin and clothes a distinct green color. Where this concentration is limited by

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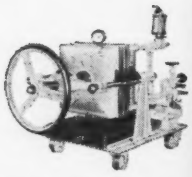

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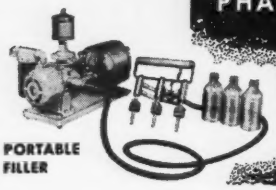

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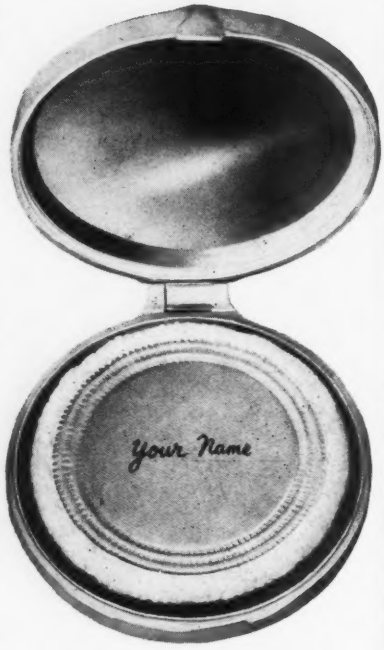

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considerations of the residual color, the deodorant effect is virtually nil.

Ion-Exchange Resins

A new principle appears to have been introduced into the field of deodorants with the work of Thurmon and Ottenstein,[65] who showed that certain ion-exchange resins are capable of taking up lactic acid, ammonia and urea of sweat *in vitro*, thereby suggesting the possibility of removing perspiratory odor by means of such materials. Subsequently, Thurmon was granted a patent[66] for deodorant compositions containing weakly acidic cation-exchange resins. The deodorant effect of these resins is attributed in part to their capacity of adsorbing amino acids present in perspiration; this is said to prevent their decomposition by cutaneous bacteria.

These findings were extended by Ikai,[67] who determined which of the several ion-exchange resins exhibited the greatest adsorption capacity. While effective deodorant action was produced by some exchange resins from either the cationic or the anionic categories, the best results were obtained with certain combinations of resins from both categories when incorporated in ointments, emulsions or synthetic gum mucilages.

Pharmacodynamic Agents

For the sake of completeness, brief reference should be made here to certain newer pharmacologic and therapeutic aspects of perspiration control.

It was mentioned before that eccrine sweating is a "cholinergic" process. Since atropine is known to antagonize the action of acetylcholine it is clear why it reduces hyperhidrosis, as has been known for some time. The effects of topical application of this drug, as well as of scopolamine were studied by Shelley and Horvath.[68] When applied by means of iontophoresis (to the flexor surface of the forearms serving as the test site), scopolamine was found to be most effective as perspiration inhibitor, and atropine was next. Direct application of scopolamine hydrobromide in the form of a 1 per cent aqueous solution for ten minutes reduced sweating markedly for several hours, and kept it at a low level for five days. Higher concentrations produced even more impressive results. However, neither atropine sulfate nor scopolamine hydrobromide were capable of controlling plantar sweating when applied by iontophoresis.[69]

At their present state, such findings are of considerable scientific and clinical, but hardly of any immediate cosmetic interest because of the toxicity of scopolamine and atropine (for the parasympathetic nervous system).

The newer anticholinergic chemicals, Banthine (*beta*-diethylaminoethyl xanthene-9-carboxylate methobromide) and Prantal (*N,N*-dimethyl-4-pyridylidene-1,1-diphenylmethane methylsulfate) have been tested as perspiration inhibitors, with the idea of

providing a lower toxicity than shown by atropine and scopolamine.[68,75] Other systemic anticholinergics are Pro-Banthine (beta-diisopropylaminoethyl xanthene-9-carboxylate methobromide), Antrenyl (diethyl 2-hydroxyethyl methyl ammonium bromophenyl-cyclohexaneglycolate), Darstine (5-methyl-1-phenyl-1-[1-piperidyl]-3-hexanol methobromide), Pamine (epoxytropine tropate methyl bromide) and Hydergine (dehydrogenated ergot alkaloids). While capable of suppressing perspiration in varying degrees,[76,77,78] all of them can produce disturbing side effects. Brun and Hunziker[79] place the anticholinergic agents in the following order of activity when applied by iontophoresis: atropine, scopolamine, Antrenyl, Pro-Banthine, Banthine, Prantal, homatropine.

Adrenergic sweating involved in the apocrine area is reduced by Dibenamine (*N*, *N*-dibenzyl-*beta*-chloroethylamine hydrochloride);[80] atropine is without effect here. Sweating induced by l-adrenaline (applied iontophoretically) is checked also by Priscoline (2-benzyl-2-imidazoline hydrochloride) and Regitine (2-[*N*-*p*-tolyl-*N'*-*m*-hydroxyphenylaminomethyl]-imidazoline).[77]

None of the pharmacodynamic agents studied thus far appears to lend itself for routine cosmetic use because of the risk of undesirable collateral action; it is possible, however, that modification of the chemical structure of one or another of these compounds may lead to an antiperspirant product of practical cosmetic utility.[81]

The Federal Food, Drug and Cosmetic Act provides, among other things, for the labeling of the several classes of products within its purview.

Deodorants which are claimed only to eliminate or to reduce odor are "cosmetics" within the definition of this statute, and are labelled accordingly. However, if the deodorant effect is attributed to an "antiseptic" agent, the preparation acquires the additional quality of a "drug"; this necessitates the disclosure in labeling of the particular substance displaying "antiseptic" action. In this connection it should be noted that the Act contains a definition of the term "antiseptic", and that only those substances may be described as "antiseptics" which satisfy the statutory definition.

Since true antiperspirants are presumed to affect a bodily function, viz., by reducing the flow of perspiration, they are "drugs" within the meaning of this term as defined by the Federal Food, Drug and Cosmetic Act. Because of this, their labeling must state the active ingredient to which the antiperspirant effect is attributed. Thus the labeling of an antiperspirant may be regulated under the pertinent "drug" as well as under the "cosmetic" provisions of the statute.

Concluding Remarks

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than for the reduction of the output of perspiration. The former, being caused mostly by bacterial degradation of secreted apocrine sweat, is subject to the inhibitory action of low pH levels (as produced by the hydrolysis of aluminum salts), or of antibacterial agents, or both. As to true antiperspirants, the limitations imposed by the risks of skin injurd and fabric damage, militate against the likelihooy of any early substantial advances in their effectiveness.

More exploratory effort is indicated in the elucidation and in a wider utilization of the antiperspirant performance of cationic surfactants. A new chapter might be opened by the discovery of pharmacodynamic agents susceptible to cosmetic formulation which would effect a localized blockage of the biochemical mechanisms activating the secretory apparatus, but without the risk of any systemic involvement.[81]

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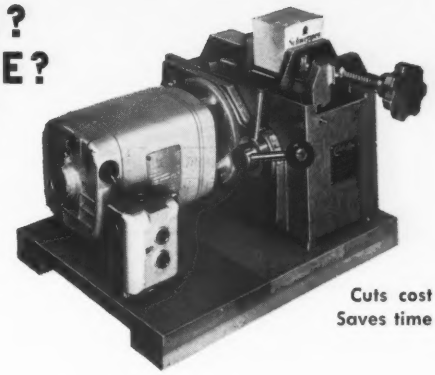

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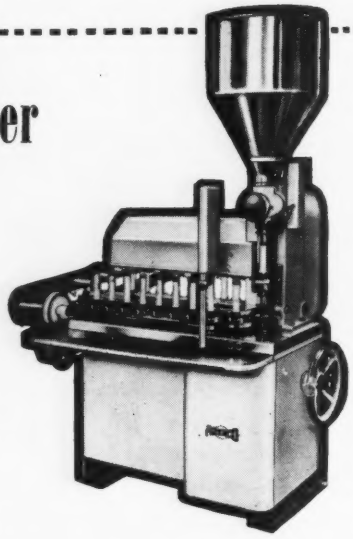

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(*Continued from page 171*)

made aware of all the antibiotics, insecticides and new vaccines which are available, it would be possible not only to control disease, but to eradicate it in many areas. Work with these drugs could be the inspiration for new discoveries, new applications.

A second aim—To encourage the development of pharmaceutical research and other research facilities in countries less advanced than the United States, always with the help of professional, scientific, and industrial experts from other countries with modern technology.

This could be achieved through agreements between a needy country's government and American pharmaceutical firms or those in other countries. Here we see the possibilities of a program designed around private group to government—a relatively new concept.

As we move into countries with preventative medicines, we should realize that this is the only type of health program which is reaching mass populations. In many instances, it is the first contact of modern medical attention these people have had. This mass preventative program lays the foundation for acceptance of curative drugs. Pharmaceutical research could be a vital link in this chain.

A third aim—would be to encourage the appreciation, adoption, and application of our medical and pharmaceutical institutions in other countries.

Many countries and their professional organizations have already shown their interest in studying American institutions and methods such as the Food and Drug Administration, the U.S. Pharmacopeia, the educational curricula and many others.

These suggestions and recommendations could be made acceptable through a broader application of person-to-person contact through exchange, hence—

A fourth aim—to encourage many more contacts among physicians, pharmacists, pharmaceutical scientists and industrialists, hospital people and other medical specialists.

Let me give you an example:

Recently a representative of Israeli pharmacy was in the United States seeking assistance for pharmacy colleges there. Through the new group I have suggested, young men and women from pharmacy colleges in Ceylon, Israel, Chile, if they wanted to, could come here. They could become acquainted with our colleges, our pharmacies, our pharmaceutical laboratories, our physicians.

On the other hand, American pharmaceutical firms might organize teams of research chemists, pharmacologists, clinical investigators, to visit other countries to help in problem analysis and the establishment of professional schools.

It is hardly surprising that person-to-person contacts are coming to play a still larger role in international affairs than they have in the past. Experience has indicated the desirability of this expan-

sion, and the ease of arranging international travel in recent years has made it possible.

The opportunities are readily apparent: a growth in understanding on the part of visitor and visited alike, and deeper insights and more lasting impressions than other means of communication usually permit.

We should remember that numerous governments and hundreds of private groups already are supporting programs to exchange students, teachers, and scholars between this and other countries. A few also are enabling persons who are leaders in other walks of life to travel for study or observation. I already have mentioned the Fulbright program. The World Health Organization has 1,000 grants a year in its fellowship program. Foreign governments have invited our doctors to their hospitals, and we have reciprocated. However, there still exists a need for expansion if the people of the United States and other nations are to understand each other better and work together for world health and understanding.

A fifth aim—to help alleviate the shortage of trained pharmacists, chemists, and other related specialists in many countries, including ours, by encouraging students through scholarships to enter the various fields, and by subsidizing the professional institutions either directly or through research projects.

A final, and sixth aim might well be for the private foundations to focus the attention of all governments on such related questions as the status of pharmaceutical development and the standards of education in medicine and pharmacy, through close liaison with such organizations as WHO and UNICEF.

It is my belief that this objective can be more readily obtained if we integrate with the Federal government's effort, the potential of the nation's private economy—the professional people, investors, civil, religious, and educational establishments.

Sometimes any kind of intervention—whether to alleviate hunger or to alleviate ill-health—may be misunderstood or resented. People who may be wary of accepting aid from the United States will more readily accept the assistance of an international organization to which they themselves belong. The world professional foundation, of which I have talked, could be one such organization through which professional and industrial members can work to help each other and to help themselves.

Permit me to summarize the aims of this plan once again: They are to bring the great benefits of American advances in chemotherapy to more people everywhere; to encourage the development of pharmaceutical research and other facilities in countries less advanced than ours; to encourage the adaptation and application of our medical and pharmaceutical institutions in other countries; to encourage more person-to-person exchanges; to help alleviate short-

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ages of trained personnel and to focus attention of all governments on aspects of the medical field as developed by the plan.

Through official and private channels, the foundation could offer help with public health education, distributing visual and literal aids.

Meetings could be held in major cities of the world to discuss the pharmaceutical challenges in relation to world health problems. The group could encourage the dissemination of knowledge through publications and, as I have said, person-to-person contact.

Unless I have overlooked limitations of a highly resistant nature, I think the American pharmaceutical industry will not shirk its humanitarian obligations. Again and again it has demonstrated that it cares by shipping needed drugs abroad to help their fellows overcome emergency.

Yours is an industry that has thrived on the challenge and the excitement of creating new medicines. You sometimes even "live dangerously" as business goes, by making a maximum financial effort to find an elusive aid against a disease, with no assurance of success and return to your stockholders.

Such a plan as I have outlined, cannot and should not be achieved solely by the efforts of governments working either independently or together. We need the coordination of private interests and private investments. . . we need the sharing of skill and experience. . . we need the helping of the weak by the strong.

The underdeveloped countries, especially those in Asia and Africa have acquired a new importance to the United States and the free world. No one privileged to serve on our American delegation to the United Nations, as I have been at the current session, can fail to grasp that these new and developing nations of Asia and Africa, now numbering 27, control more than a third of the votes in the General Assembly. Almost all future additions to the family of free nations will likely be in Asia and Africa. The outcome of the great struggle between freedom and Communism will unquestionably be decided by the turn of events in these countries. Our future is tied in with theirs.

People can only start thinking of freedom and the rights of the individual when they are freed from the day-to-day concern of trying to eke out a bare survival and are in good enough health to turn their attention to matters other than sheer subsistence. In helping others to help themselves, we are achieving in a practical way a means for these people to live fuller lives.

It is through an increasing co-ordination of endeavor within nations and between nations—on a people-to-people basis—that the modern need of worldwide health can, will and is being transformed from a hope into a reality. . . resulting in happy relationships between people. This sort of security can be the basis for a lasting world peace.

But the requirements of a just and enduring peace are exacting and difficult.

Clearly we cannot expect to live peacefully in a world slum overflowing with disease, tension, and hate. Nor can we impose peace by bombs and tanks.

As former President Truman said:

"The only kind of war we seek is the good old fight against man's ancient enemies. . . poverty, disease, hunger, and illiteracy."

We must join in this all out attack on poverty, disease, hunger, and illiteracy. We must share our technical assistance—the scientific know how—in food production, industrial development, health services, and education. Such a program will increase the wealth and welfare of the underdeveloped countries and bring greater opportunities to their people.

All of us—through consistent practical, concrete action, must demonstrate in unmistakable terms our genuine concern for the rank and file of humanity, and our willingness to help them build a better life.

Such a program will take time. The poverty and insecurity that beset the majority of the world's people were centuries in the making, and they will not be erased overnight. But delay cannot be tolerated. We must march ahead with confidence, hope, imagination, and boldness.

ACCIDENTAL RETURNS FROM RESEARCH

(Continued from page 173)

failure rather than success is the order of the day.

Actually, failure is a necessary condition for success. Or to paraphrase a famous ad: "In research, failure is one of our most important products." So we should avoid *orer*emphasizing the necessity for our research people to produce results measurable in dollars and cents. A scientist is very unlikely to do his best work with one eye glued to the microscope and the other to the cash register.

Let me distinguish here between research and development. We sometimes think of the two as being the same thing, and—in truth—the line between them is often hard to distinguish. Research might be compared to an explorer finding new lands; development, to the geographer who maps out the new territory. Research discovers new knowledge; development tests the utility of that knowledge. As I said, the lines are not clearly drawn. There's a kind of no man's land where one type of investigation shades into the other.

Most of what we call industrial research is applied research or development. Some of us like to call the applied, fundamental, but really most of the time it isn't. Applied research can very often be closely planned, and may well be successful partly because of this close planning. In medicine, one of the best examples of the efficiency of well coordinated, applied research is the development of the Salk vaccine. This, and our giant, concerted drives against

cancer and heart disease, may incline us to think that carefully controlled, specifically directed research is about the only really effective way to insure important medical discoveries. As a matter of fact, though, medical research in particular contains many examples of serendipity. It is not rhetorical fancy, but plain sober fact, that if it weren't for accidents many of us—perhaps most of us—would not be alive today!

Which brings me to one of the most fortunate accidents which ever occurred. The mold which in 1928 contaminated a bacteriological culture being grown by an English bacteriologist, Alexander Fleming. The accident responsible for penicillin.

Let me quote briefly from what is probably one of the most important documents published in this century: Dr. Fleming's article announcing the discovery of penicillin. It appeared in the June, 1929, issue of the *British Journal of Experimental Pathology*. "While working with staphylococcus variants a number of culture plates were set aside on the laboratory bench and examined from time to time. In the examination, these plates were necessarily exposed to the air and they became contaminated with various micro-organisms. It was noticed that around a large colony of a contaminating mold the staphylococcus colonies became transparent and were obviously undergoing lysis (dissolution.). . . "

Fleming's magnificent accident would have had no significance at all if he hadn't been quick to grasp its possible significance. If he had not possessed a prepared mind.

I could give many other examples of serendipity occurring in research. But what I have given should suffice. What does all this prove? Does it prove that the *best*, the most efficient type of progress in research is accidental? That the scientist should just sit around the lab hoping for some happy accident to occur? Not at all. But in a sense every discovery is an "accident," although most are "planned accidents," because the discovery is always something of a happy surprise. There is always the chance that the well planned road followed by the scientist does not lead to the new country he is trying to discover; indeed, that country may not even exist!

You'll notice that in these stories of serendipity that the happy accidents occurred to men not to *teams*. To men working more or less independently. Unsupervised. Unsupervised? Terrible thought! In business today, we seem to think there is something a little neurotic—if not downright treasonous—about the scientist who works alone. Who doesn't join the *team*. Our philosophy seems to be that with enough spirited, energetic *teamwork* we can solve almost any problem. Of course we need teamwork; of course we need smooth working teams. But remember, championship teams always have one or more stars. Management, like the coach of a team, has a two-fold problem: to let the stars develop, and at

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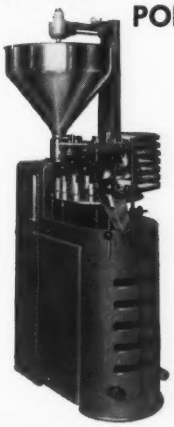

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the same time to preserve the efficiency of the rest of the team. It's a tough job. The answer to the problem certainly is *not*, "fire the stars," or "make sure you don't hire any stars." Business has been accused of doing both.

So I don't want for a minute to belittle the importance of teamwork. Nor do I want to underemphasize the importance of applied research closely directed to *specific, practical* problems.

Well, what can we do to foster the prepared mind? To help make our research laboratories, "happy accident prone?" I don't *really* know. But I may be able to offer a few suggestions.

A recent best seller, *The Organization Man*, claimed that many of our personnel screening policies are designed to eliminate people who do not conform to a standard pattern; that we are not only content with, but eager for, mediocre people whose only real talent is the ability to fit in with the group, to work well with the team. This criticism is a good bit exaggerated, I think; but there may be some truth to it. Maybe we should carefully look over our hiring and promoting system. After all, the "odd balls" often are more valuable people than the well adjusted. We may be giving too much importance to the quality of being "well adjusted." Let's face it, if we got rid of all the odd balls possibly a lot of *us* would be out of a job.

Odd ball may be too strong a word. I'm not talking about a man who is extremely unusual—who wears a Napoleon hat. No, I mean the man who doesn't conform, who doesn't think the way most of us do, doesn't act the way most of us act. It's a little frightening that non-conformity should now be considered such an undesirable quality.

There is no doubt, though, that the non-conformists can provide special problems for Management. As creative and valuable as they may be, it seems unfair to other competent but less gifted scientists to see certain of their colleagues treated with special deference, as if we were separating the sheep from the goats.

I can remember an extremely valuable senior scientist who made many very important contributions to our research program, but who apparently did very little work, and took privileges that were quite conspicuous. He was a flower fancier. He spent so much time growing flowers in his laboratory, that it began to look like the beginnings of a small greenhouse.

We were very worried about the effect this man was having on the morale of those who worked with and for him. But when we looked into the situation we found that our fears were groundless. He was not resented. The others around him realized that if they were contributing as much as he, they *too* could grow flowers in the lab, or design Rube Goldberg apparatus, or whatever.

When you come to think of it, this makes a lot of sense. The good worker doesn't resent the boss's freedom from detail work, his long lunch hours, or his "Cadillac." These are benefits that the worker may some day have himself.

Somehow, though, we are often a bit reluctant to give the scientist what we term special privileges, but which he feels is a necessary modus operandi. Part of our reluctance, I think, comes from our stereotyped idea of the scientist as a man. We think of him as a person who does not quite belong to the same species as other human beings; who lives in a different world; who thinks in a different way. Too often, Management's view of the scientist is merely a more sophisticated version of the popular myth that the scientist is a combination of learned superman and spoiled child.

Actually, the scientist thinks in much the same way we do. The problems he encounters in his work are different from our problems, but his method of arriving at solutions is much the same as ours. He's not necessarily smarter or more creative than we are. The psychological process of creativity—whether a man is creating a new vaccine, a novel, or an advertising campaign—is much the same for everybody.

Failure to recognize the scientist as a fellow, fallible human being leads us to be less tolerant of his failures, and to demand more from him than he can possibly deliver.

Who is to blame for this curious notion of scientific infallibility? Scientists themselves, mostly. Scientists have done very little to discourage the superman myth. And they have drummed into us time and time again the superiority, the infallibility of the "scientific method": the allegedly unemotional, objective evaluation of carefully observed evidence. In fact, today the word "unscientific" has almost become a synonym for "untrue." Yet the giant, supposedly indestructible edifice of *19th* Century science has been reduced almost to rubble by the discoveries of the Twentieth Century. And who knows how well our own scientific "laws" will hold up in the future? The final evaluation of any set of data is an individual, subjective judgment; and all human judgment is liable to error.

Let me give an example—and an important one, I think—of how scientists themselves misrepresent the workings of science. Even without considering examples of serendipity, anybody who has anything to do with research knows very well that a hunch may be the real reason for conducting an experiment. And that often an experiment may change so radically after it has begun—perhaps because some unexpected result suggested a more interesting approach—that it really becomes a different experiment entirely. But you'd *never* think so when you read the published scientific report describing it.

The scientist you know as a genial, sensible, rather humble man, often becomes pompous stilted and formal when he puts pen to paper. Did you ever

read a paper that begins "For no good reason at all I had a hunch that. . . " or, "I was just fooling around one day when. . . "? No sir! All trace of anything haphazard, anything *human* is removed from published reports. The paper will more likely begin: "In view of recent evidence concerning the validity of the Glockenspiel theory, it seemed advisable to conduct. . . " And the report goes on to describe a carefully thought out experiment that inevitably followed not only a logical, but also a *chronological* order. *This* was done, then *this* resulted, therefore *these* conclusions were suggested. The paper follows a formal order that demands the method be given first, the results second, the conclusion third. No hint here, that, as it often happens, the method was really kind of made up as the scientist went along, or that he reached certain conclusions before the results were all in, or that he even started *out* with certain conclusions, or certain perhaps accidental results that determined his method. Or that he started doing a different experiment altogether!

So if the scientist promulgates the fallacy that all experiments follow a definite chronological order, perhaps management can be forgiven for setting up unrealistic time tables on research productivity. And if the "scientific method" is as objective, as free from subjective error, as scientific documents might lead us to believe, then we can be forgiven for expecting research to be predictable.

Some scientists, particularly our younger ones, find in the "scientific method" a substitute for imaginative thought. I've attended business conferences where a scientist is asked what *he* thinks about the advisability of continuing a certain experiment, only to have him frown, look at his graphs and say, "the data are still inconclusive." If you say, "we know *that*, but what do *you* think? Is it worthwhile going on? What do you think we might expect? Very often the poor man is a little shocked that you even asked him to speculate. So whether or not the experiment continues sometimes just has to be a decision for management to make.

I haven't talked about the specific things we do at Smith, Kline & French to promote creativity and promote serendipity among our scientists. We do most of the usual things, plus a few perhaps unusual ones—but I wouldn't take a bet on how well any of them work.

But if we haven't solved the problem, we have at least stated it. We have made both management and our scientists aware that the problem exists. This is an important step forward. It at least helps to create an atmosphere in which creativity and, therefore, *serendipity* may occur.

People usually only hear about the world shaking examples of serendipity. Actually, small examples of serendipity occur every day—or ought to. Some that have occurred to us have proved quite valuable.

In a sense, the growth of Smith, Kline & French as a leading pharmaceutical house was partly the

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result of serendipity. We were developing a drug which was very effective in shrinking the nasal mucosa. We were very worried because it had some extremely annoying side effects. It stimulated the central nervous system. Then someone suggested that this side effect might be profitable, that it might have some psychiatric use. So we tested for this and indeed found such was the case. But we also found to our displeasure that the drug cut down appetite considerably. Then the late Abraham Myerson—the well-known psychiatrist—suggested that *this* side effect too, wasn't so bad. That many people *wanted* to have their appetites reduced. So we finally marketed the drug for two chief indications—relief of depression, and the cutting down of appetite. The drug—'Benzadrine'—was very successful. And it was successful for the very reasons we at first considered drawbacks. And we sold a lot more 'Benzedrine' because of its psychiatric use, and its anti-appetite effect than we ever did because of its ability to shrink the nasal mucosa.

So you see the serendipities, the accidental returns from research can be quite valuable. But they will not occur unless management gives its research people time rather than timetables: time to think, time to incubate ideas.

And we must free ourselves from the "million dollar baby fallacy." Discoveries are most likely to occur when management realizes that they are not *bound* to occur, that the function of research is *not* just the business of coming up with new discoveries. We must have faith in the value of research.

I think this faith is well justified. A Research and Development operation is like a growing tree. The roots and the trunk represent Research. The branches represent Development. The roots and trunk—Research—research which *fails* as well as that which succeeds—provides the indispensable food—knowledge—without which the branches can't grow, and can't bear fruit—new products. Without the branches there would be no fruit for the market. But without the roots and trunk—without *Research*—there would be no tree at all!

WONDER DRUGS TOMORROW

(Continued from page 175)

while we do not have infectious diseases completely licked yet, the shape of the coming victory is already quite clear, and the focus of research interest has already shifted.

It seems to me that we may see a breakthrough in the cancer problem in the next 10 years—perhaps even in the next five. By this I do not mean a universal cure, but the discovery of some fundamental fact which will lead eventually to an effective treatment. An example would be the eminent Dr. Otto Warburg's hypothesis that all cancer cells derive their energy from fermentation instead of oxidation. This hypothesis is yet to be confirmed, but if it is, it will be a discovery of exactly the fundamental nature that is needed.

Warburg's hypothesis is of particular interest because it undercuts the problem of multiple etiology in cancer. We now have long lists of carcinogenic agents, many of them seemingly quite different from each other in chemical nature. If Warburg is right, however, all these "causes" are reacted to by the cell in the same way; it shifts over to fermentation, and because this method of gaining energy does not leave enough left over to maintain cell differentiation, the cell promptly begins to act as a free agent. The idea has great elegance, and we should soon know whether or not it accounts for all the facts.

In the meantime, we are making some progress now. The determination that cancer cells can be attacked, on principle, in the same way we attack an infecting organism was an enabling concept; and we now have such compounds as 6-mercaptopurine which produce remissions in leukemia through a selective anti-metabolic action—which we now think to be the way antibiotics work against germs. Some small isolated sectors of the battlefield have been cut off and conquered; for instance, with radioactive iodine—iodine 131—we have been achieving cure rates of 90 per cent or better against thyroid cancer. Another isotope has also proven to be a potent weapon against polycythemia vera, a disease which might be described loosely as the opposite number of leukemia.

There is a rival theory to Dr. Warburg's, and that is the virus theory. I have a suspicion that this may be another one of those "either-or" situations which is actually artificial, and that both hypotheses might turn out to be true. We do know at least one form of cancer that is caused by a virus, and that is Rous poultry sarcoma. There, by the way, was a great piece of work that deserves more honor than it generally gets. Rous discovered the first animal cancer, proved it was infectious, and identified the agent—all in a single paper! That is batting a thousand in any league, it seems to me.

In the second major type of degenerative disease, that of the circulatory system, we are beginning to see evidence that it is closely tied to diet. This has been suspected for a long time, but for many years we have been more or less staring fixedly at the problem of cholesterol levels without understanding what we were seeing. Now, however, a good many experts in this field feel that the real culprit is saturated fat, particularly animal fats and hydrogenated shortenings, and that the unsaturated fatty acids of most vegetable oils and some fish probably are not involved. If this can be established, it will mean a thorough-going revolution in the American diet. We will be eating many more cereals, grain products, vegetables and fruits, and far fewer eggs, steaks and pats of butter.

Such a revolution, if it proves to be necessary, is not going to be greeted with joy by everybody concerned, but there is no doubt in my mind that the women of America are going to insist upon it. Though they are far less subject to atherosclerosis than men are, their interests are directly involved—for they are being widowed at a frightening rate by this disease and its sequels. Recently, too, we have seen evidence that coronary disease starts far earlier in life than we had heretofore suspected. In a study of American soldiers killed in Korea, published in 1953, the Armed Forces Institute of Pathology reported that 77.3 per cent of 300 men studied showed gross evidence of coronary disease—and the average age of these men was 22 years!

This finding assumes even greater significance if you examine it in the light of current population statistics. From 1940 to this year, the average population increase in the United States was 30 per cent. Within that percentage, however, the increase was differentially distributed among age groups. The number of people 60 years of age or over was up 59 per cent; children from five to nine increased 68 per cent, and children under five increased a whopping 76 per cent. Young adults and middle-aged people accounted for only a small proportion of the increase.

Now by 1975, the experts predict, we are going to have 220 million people in this country, which is a jump of 45.7 per cent over our 151 million population of 1950. And by far the largest proportion of that huge population is going to be concentrated at the far ends of the spectrum. It is then that these coronary lesions in young men of today are going to be turning active, creating heart attacks, strokes and other tragedies in wholesale numbers. The significance of the Armed Forces Institute's discovery is that if we expect to prevent these tragedies, we must start doing something about them now. By 1975 it is going to be entirely too late.

This point of view on the role of fats in nutrition is not yet agreed upon, although a good number of experts in the field share it. Nevertheless, there can be little disagreement on the broader proposition that "A man is what he eats"; and we are going to see many new concepts in nutrition in the coming years. Our ideas of food fortification seem to be about due for another overhaul, with minerals as well as vitamins playing an important role. Some of these minerals are going to seem decided oddities to those of us who were brought up to think of dietary minerals as nothing but iron and calcium. Who would have thought, for instance, that the human body would be found to need minute amounts of molybdenum? Yet it was only a few years ago that it was demonstrated that molybdenum is an essential constituent to an important enzyme called xanthine oxidase. It is fortunate that nobody told me this when I was in in school, because back then we hadn't heard of xanthine oxidase either.

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may see essential amino acids added to the must list for food fortification. There is persuasive evidence that our diet—and particularly the diets of our children—would benefit by the fortification of bakery goods with lysine. Other essential aminos, which the body cannot synthesize, may also be added. This is a new concept, because up to now we have been fortifying only with substances which are not nutrients—like vitamins—or at best are micro-nutrients, like the minerals. But amino acids are not micro-nutrients, they are nutrients in the fullest sense of the word, and if they are to be added at all they have to be added in quantity.

However, I see nothing really unthinkable about that. We fortify rice by adding vitamins to it, but the Spaniards do it by adding clams and pieces of chicken. They call it paella, and it's very nutritious! Putting lysine in bread is an entirely analogous process.

Earlier I mentioned the aging process as an example of a degenerative disease. That may not be in fact what it is, but the definition will do until a better one comes along. The fact is that we have only just scratched the surface of gerontology, and until se understand the mechanics of the aging process we are not going to make spectacular progress toward a practicable geriatrics. Is it the result of some specific toxin, which is passed along from generation to generation? Some animal work by the eminent anatomist Albert Lansing would seem to suggest that it is: he found that the children of young mothers persistently lived longer than the children of older mothers, and that he could cut the life span to less than half of normal at one end, or double, triple or quadruple it at the other end, simply by breeding for this effect.

Lansing's work was with rotifers, and these tiny animals may have no illumination to offer as to how humans age. (Incidentally, the experiment works with flatworms, too.) On the other hand, if old age is caused by a specific toxin or a group of them, then there must be an antitoxin lying in wait for us to find.

Talk of a lifespan of 150 years may seem like an exercise in fantasy, but stop a moment to think of what we have already accomplished in this field. In the best days of the Roman Republic, the citizen who lived to be 30 was a lucky man. Today, thanks both to modern public health measures and such drugs as pencillin and Terramycin, average life expectancy is just a decimal point short of 70 in the United States—and it is even better in a few other countries, where I presume they have fewer automobiles than we do. In other words, by getting the upper hand with the contagious diseases, we have better than doubled the lifespan. If we can also conquer the degenerative disease, it seems reasonable to suppose that we might double it again—thus living an adult life which is proportionate to the length of our growing period, as most animals do.

PATENT THOUGHTS AND TRENDS

(Continued from page 199)

The West Virginia judge noted that there is an exception to the general rule that a product occurring in nature is not patentable, this exception being that if the article is of such purity that it differs not only in degree but in kind it may be patentable. However, the judge held that the general rule and not the exception applied here.

That this West Virginia District Court case will not be the last word on this patent can be taken for granted. As a matter of fact another suit under the same patent was filed in the New Jersey federal district court against Anheuser-Busch on May 14, 1957. West Virginia and New Jersey being not only different federal districts but also in different federal circuits, one may assume that in time decisions from two different circuit courts of appeal will be rendered on the patent in question.

Even though no actual deception or "palming-off" was shown, a high federal court recently held that where a manufacturer suggests substitution by druggists of his product for those of another manufacturer prescribed by physicians, this amounts to unfair competition. The case in question involved Upjohn against David Schwartz, doing business as Bryant Pharmaceutical Company.

The drugs in question were not patented and were generally known. No one had any monopoly of the capsules or tablets of any particular size, shape or color as these were functional features and incapable of acquiring a so-called "secondary meaning."

The court recognized that anyone could put up the same formula and even the same size and color of capsules and tablets so long as no deceitful practices are employed. However, it was shown to the court's satisfaction that the defendant had cards printed listing its products with a blank line along side each, on which one of the defendant's salesmen had written the name of Upjohn's corresponding products, which the court felt was admittedly an aid to a druggist in making substitutions. It was also shown that another salesman of defendant had given another druggist a similar card for the purpose of making substitutions. Also, defendant's products were sold to druggists at half the price of Upjohn's and the court felt that the great difference in price would be an incentive to a druggist to substitute Bryant's products for Upjohn's. In the language of the court:

> "The confusion of defendant's products with plaintiff's products was defendant's work. His purpose was to benefit from the favorable repute which plaintiff had established for its products. The possibility of substitution had been created by defendant. The suggestion of substitution had been made by defendant's agent. To require that in addition it must be shown that the druggists did what defendant had made it possible

for them to do, and had even suggested that they do, and which was to their profit to do, before a court of equity will intervene, runs counter to the inherent power of the court of equity to prevent an intended fraud from reaching its full fruition."

WOMEN AS COSMETIC CUSTOMERS

(Continued from page 185)

she did for us: An office makeup kit—actually a touch up kit—with everything easy to get to and easy and quick to use without making a 'production' of the operation, and a quick magic cosmetic for dates after office hours, one that could transform her aud keep her looking fresh throughout an evening of dancing!

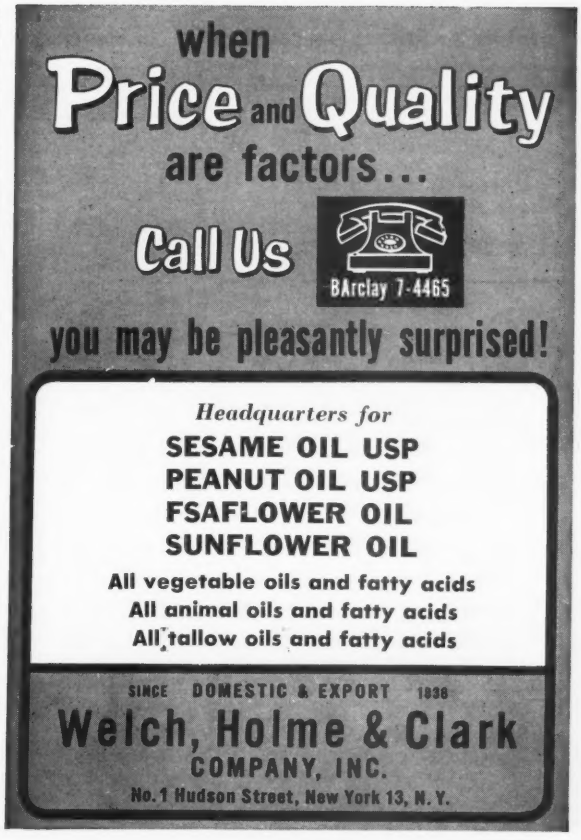
This is the most seriously competitive period in her life economically and personally, it's the period when she must set herself up in the business of life, found a home, and set a pattern of wage earning. On the subject of wage earning, there are twenty-two million women working today. Consider what this means to sales of grooming aids and cosmetics!

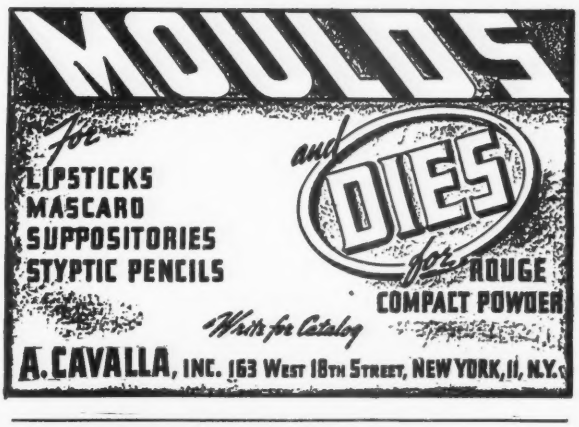
If our Huntress manages her campaign successfully, before too many years she is a wife. This is the period when she is more interested in family trees than in toiletries. Now the place to look is in her market basket. She has neither the time nor the money to waste on too much experimenting. She spends about as much money on toiletries as ever, but now she's buying them for the whole family. Her 'toiletries list' includes such items as tooth paste, tissues, shaving cream, talc, shampoos, deodorants, etc., along with her cosmetics.

Her time is so limited that she has little time for replacement purchasing, so she buys the largest economy sizes available. Economy is a word she respects. Now she's our target for everything from razor blades to baby powder, and because her hands are in water so much she uses extra quantities of hand lotions and creams. . .

What are her cosmetic dream ideas? Well most of them involve getting one product to do everything; i.e., a shampoo that would clean her hair, condition it, automatically curl it and set it, so that when it's dry all she has to do is to run a comb thru it! And, oh yes—a big kitchen wall dispenser for hand lotion, just like her coffee dispenser. One or two magic daytime make up formulas that go on fast and stay on long. A wonderful over-night treatment cream that couldn't be detected when it was on—that would make her look beautiful to her husband all the while it was doing its work—and that would stay on to make her look fresh and well groomed when she woke up . . .

Well, there she is, the new woman—all four of her—Twiggling, Huntress, Wife, and 'December Bride'. I've given you all these examples because they are all part of the multi-faceted personality of the woman of today.





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ADVERTISING INDEX

Algin Corporation of America....249
American Cholesterol Products, Inc....238-239
American Cyanamid Company....Facing 154
Anchor Hocking Glass Company....189
Ansbacher-Siegle Corporation....261
Arenco Machine Company....254
Aromatic Products, Inc....154
Atlas Powder Company....Facing 147
Avon Products, Inc....Facing 155

Baker & Bros., H. J....242-243
Baker Chemical Company, J. T....229
Bertrand Freres, Inc....210

Carr-Lowrey Glass Company....196
Cavalla, Inc., A....263
Chaleyer, Inc., Ph....255
Chrystal Company, Inc., Charles B....254
Clintbrook Chemical Company, Inc....252
Colonial Applicator Company....182
Columbia-Southern Chemical Corporation....147
Continental Can Company, Inc....Facing 190

Delta Chemical Works....265
Distillation Products Industries....138
Dodge & Olcott, Inc....152
Dow Chemical Company, The....158
Dragoco, Inc....Bet. 154-155
Du Pont De Nemours & Company, Inc....184
Durlin Company....Facing 138
Duveen Soap Corporation....131

Eastman Chemical Products, Inc....235
Emery Industries, Inc....141
Ertel Engineering Corporation....250

Fairmount Chemical Company, Inc....265
Felton Chemical Company, Inc....140
Firmenich Incorporated....Facing 139
Florasynth Laboratories, Inc....226

General Chemical Division, Allied Chemical & Dye Corporation....192-193
General Mills....151
Gifford-Wood Co....246
Givaudan-Delawanna, Inc....Bet. 162-163
Glo-Brite Products....265
Goldschmidt Chemical Corporation....139
Goodrich Chemical Company, The B. F....146
Griffin-Rutgers, Inc....253

Halby Products Company....253
Hanovia Chemical & Manufacturing Company....143
Harchem Division, Wallace & Tiernan, Inc....235
Haring Equipment Corporation....257
Hazel Atlas Glass Division of Continental Can Company....Facing 190
Heyden-Newport Chemical Corporation....224
Hoffmann-La Roche Aromatics Division....148-149
Hoffmann-La Roche, Inc....Facing 162; 222
Huisking & Company, Charles L....252

Kohnstamm & Company, H....Facing 206
Kolmar Laboratories....241

Lee Metal Products Company....218
Leonhard Wax Company, Theodor....265

Mallinckrodt Chemical Works....Facing 163

National Aniline Division, Allied Chemical & Dye Corporation....153
Neuman, Buslee & Wolfe....251
New York Quinine & Chemical Works, Inc....Facing 146
Norda Essential Oil & Chemical Co....Cover 2
Nysco Laboratories, Inc....265

Oil Equipment Laboratories, Inc....186
Old Empire, Inc....255
Owens-Illinois Glass Company....180-181

Penick & Company, S. B....204
Pennsylvania Glass Products Company, Inc....198
Pfaltz & Bauer, Inc....263
Pfizer & Company, Inc., Charles....Cover 4
Pittsburgh Lectrodryer Corporation....214
Pneumatic Scale Corporation, Ltd....216
Polak's Frutal Works....202
Private Label Cosmetics....245
Progressive Labeling Machine, Inc....265

Read Standard, A Division of Capitol Products Corporation....220
Reheis Company, Inc....247
Rhodia, Inc....200
Richford Corporation....194
Risdon Manufacturing Company, The....Facing 191
Ritter & Company, F....259
Robertet, Inc., P....150
Roure-Dupont, Inc....144-145

Schimmel & Company....142
Shell Chemical Corporation....Facing 207
Sindar Corporation....Facing 231
Staley Manufacturing Company, A. E....244
Standard Oil Company (Indiana)....179
Standard Pharmacal Company....259
Stephan Chemical Company....Facing 230
Sterwin Chemicals, Inc....265
Stokes Corporation, F. J....212
Synarome Corporation of America....261
Synfleur Scientific Laboratories, Inc....208
Syntomatic Corporation....232

Tamms Industries, Inc....265
Tombarel Products Corporation....134

Ungerer & Company....Cover 3
Union Carbide Chemicals Company....160
U. S. Bottlers Machinery Company....240

Valcourt, Inc....250
van Ameringen-Haebler, Inc....136-137
Vanderbilt Company, R. T....135
Verley & Company, Albert....156
Verona Chemical Company....237

Wallace & Tiernan, Inc....235
Welch, Holme & Clark Company....263
Whittaker, Clark & Daniels, Inc....257
Will & Baumer Candle Company, Inc....251
Witco Chemical Company....266
Wolf & Company, Jacques....252

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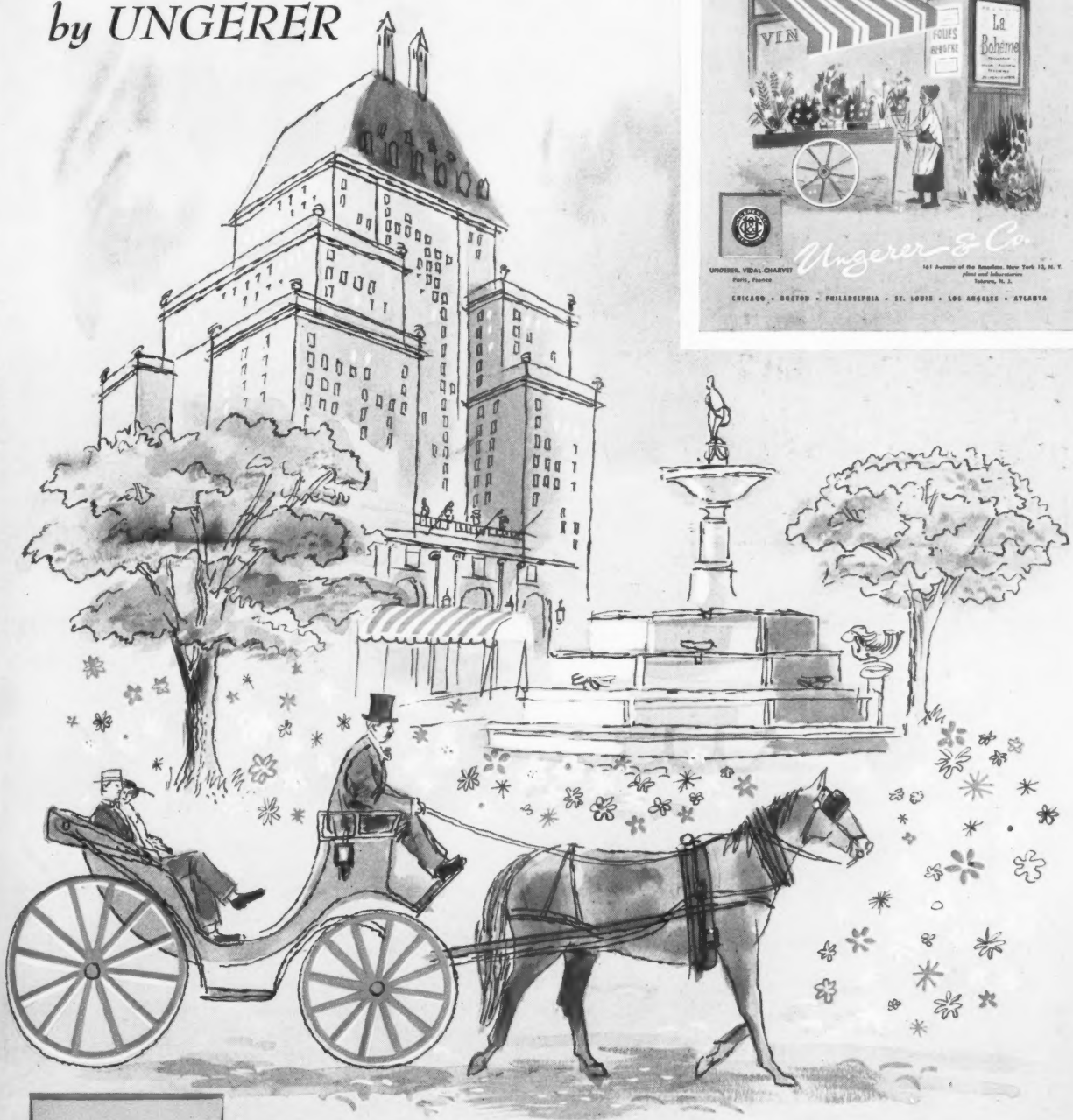

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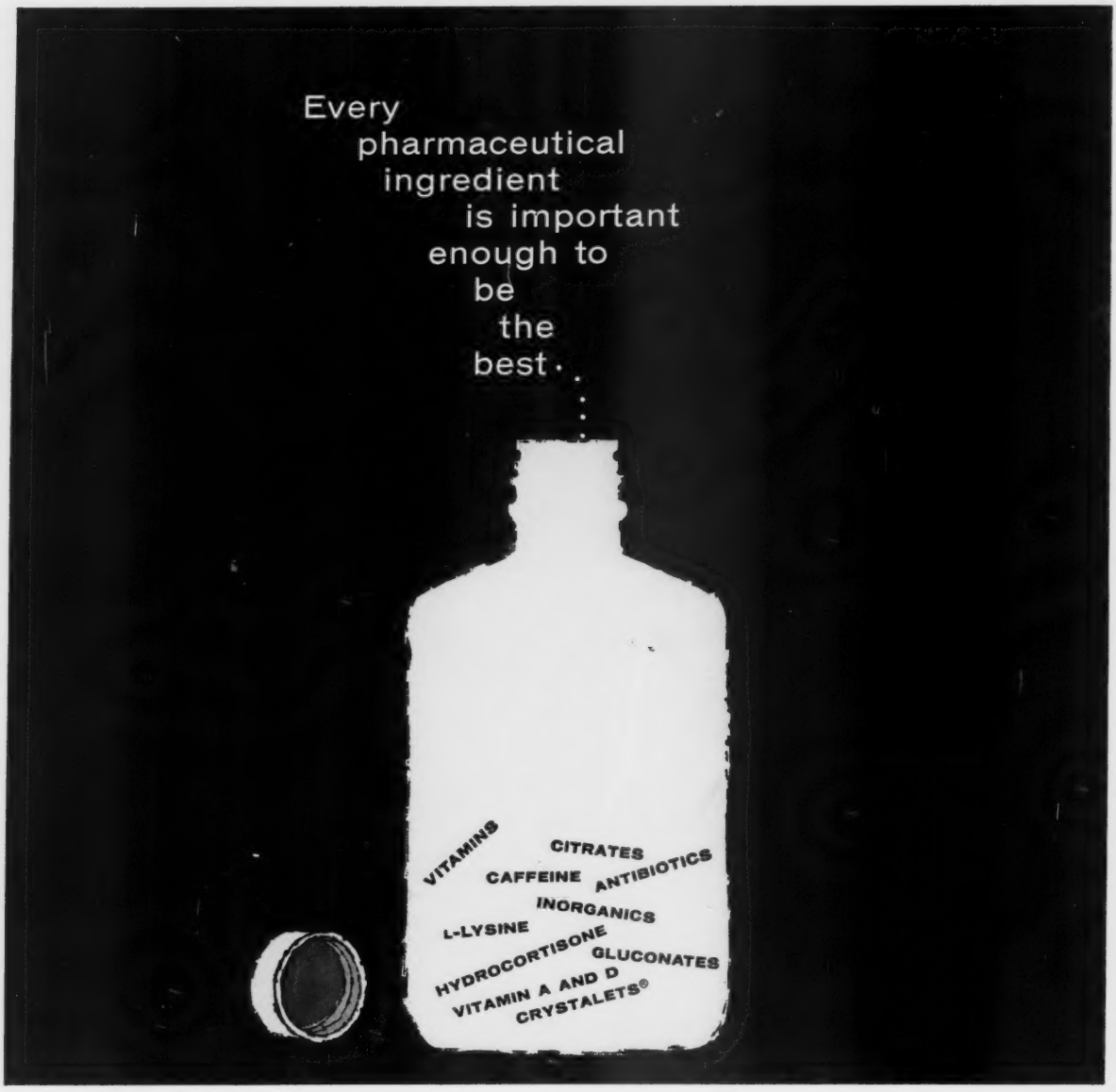

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